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ADDRESSES AND ORIGINAL ARTICLES

THE HYGIENE OF A QUIET MIND *

By Lord Horder, G.C.V.O., F.R.C.P.

I had better begin by defining my subject. I am dealing primarily with the Common or Public Health. The idea that the state of the mind is a factor in the Common Health may seem novel but I hope to justify it.

I have already committed myself to the view that the Common Health cannot be considered properly apart from the Common Happiness. If this is true the mind enters into this question quite as much as the body does. And if it be true, as we generally suppose it is,—appearances, at times, to the contrary—that it is in the realm of the mind, rather than that of the body, that mankind progresses, then, whatever we do to improve the body we dare not neglect the mind.

We are well accustomed to the notion of hygiene in regard to the body. We accept, and applaud, quite properly, the many advances made during the past few decades in the sphere of preventive medicine, and we are proud of the fact that this country had led the van in this regard. Even in utilising the science of nutrition for the service of the citizen, and the citizen's family, we are showing signs of keeping the lead in public hygiene, though there is still much to be done in this direction.

But there is a hygiene of the mind as well as of the body. There is a state of mental fitness as there is a state of physical fitness. I am not thinking of, and I shall not to-day be concerned with, persons afflicted by mental disease, any more than, when we talk of physical fitness, we have in mind primarily persons who are suffering from bodily disease. I am thinking of what we conveniently speak of as the man in the street, the average member of the community. It is his, and her, mind that I have in view, just as it is his, and her, body.

Physical fitness is much sought after, especially in times of national stress. Whether for offence or defence physical fitness is a basic part of a nation's preparedness and therefore enters conspicuously into a stateman's or a leader's appeal. The present call to physical fitness, accompanied in some countries by a highly organised and heavily subsidised scheme of training, with the element of compulsion added, is a state of things that strongly suggests a thinly veiled preparation for war, or for the preservation of peace,—for as between these two intentions the thoughts of some folk have become rather confused. Nor, I fear, is the confusion entirely discouraged.

In our slower, unregimented, way we British are following suit.

SCOPE OF MENTAL HYGIENE

This "drive" for physical fitness has no equivalent on the mental side, unless we can consider rewriting history, both past and current, or mechanising religious beliefs, in terms of ultra-nationalism, as an effort in this direction. But I do not remember any public utterance that bade the citizen "Seek ye first the Kingdom of God and all these things" (that is, muscles, heart, lungs and brain) "shall be added unto you."

An organised attempt at improving mental hygiene, if we consider the whole range of mental development in the public interest, admittedly, would seem to be a task for a superman. Yet if we contract our field of vision, and consider first things first, then there surely are some basic helps towards mental hygiene which, though they lack the note of direct psychological appeal, are still within the range of practical achievement. They are things which have to do with that borderland where mind and body meet, where they work together, play together, grow up and become mature together, the mind in training for the roll of dominant partner all the time. What are these things? A sense of security in respect of food and shelter and work, and (we must add just now) national and empire self-preservation; an adequate amount of sound sleep; some leisure; and what we all agree these days to call the amenities of life. These are days of Planning. The more planning the better. And the wider the outlook of the planner the better still for the people on whose behalf the planning is done.

There *are* things to do about these fundamentals. They *are* important, because if they are safeguarded for us the life and growth of the mind are enormously assisted.

Life and growth are out of our hands anyway, whether it be of the body or of the mind. The gardener, however expert, cannot *make* the plant live and grow; he can but see that it is supplied with the means of these,—air and sun and water and proper soil. He can do some training in addition, but life and growth are out of his hands. The psychologist can explain us to ourselves, in a terminology which changes from time to time, but he cannot give life and growth to our minds.

Can the State do more for the hygiene of our minds than ensure its basic needs? I am not at all sure that it cannot. In addition to keeping the channels of our senses unobstructed and resolving the mind's more primitive conflicts, could it not perhaps go a step further and provide us with authentic facts, tell us things that do actually happen in the world, so that we are informed about events? Or are we so debased that a mere record of happenings would find but few readers whilst the propagandist newspapers continue to boast of their competitive millions? Even if a State news sheet of this kind had but few readers these few would be so important that the experiment seems worth making. The "press" would still be "free" and comment would still be unrestricted. There are so few countries left that *are* free that, with all the evils attaching to a free press, we must be very careful not to reduce the number of free countries any further.

It is doubtful if more than this can be done by the State in the cause of mental hygiene, and it is doubtful if more is necessary. The rest is with us. Unlike our bodies, our minds cannot be classified in terms of A1 to C3 because there is no standard of mental fitness. For when I use the word "mind" I am not, of course, referring to mere intelligence, though this is a very important mental attribute. Our "intelligence quotient" does admit of rough measurement, but little else in our mental equipment, if anything, does. With no standard to aim at, therefore, a thorough scheme of mental hygiene is not practicable.

o

* Extracts from the Trueman Wood lecture delivered on March 23rd before the Royal Society of Arts. The lecture will appear in full in the *Journal of the Royal Society of Arts*, to which we are indebted for permission to reproduce these passages.

There are other great differences between the mind and the body. Development on the physical side, though it may go far, is relatively limited, but in the case of the mind potential development is vastly greater. Then again, individual deviations from the average on the side of the body fall within very narrow limits; on the side of the mind the deviations sometimes assume relatively enormous proportions. In the matter of physique, a dwarf is scarcely more than half as small, and a giant is certainly less than half as tall, as the average man. But in the matter of mental stature, even if such a state of things has its rough counterpart when we consider the lesser developed minds amongst us, what measurement shall we accord to the mind of Euclid or Plato or Leonardo or Newton or Shakespeare?

Although we cannot explain why it is that great minds like these suddenly arise, like rockets from the dusky earth, we can understand a little how it is possible for them to do so. The dawn of mind dates from the beginning of organic life so that man's mind has a history that goes back many millions of years.

BODY AND MIND

There are two or three other pertinent facts that must be introduced in this approach to the main part of my theme.

The seat of man's mind is his brain. His mind is concentrated in the brain to a much higher degree than is the mind of any other living organism. Man's brain is by far the most important part of his body. It is served by all the other parts and it controls all the other parts. The mind and the brain are indissoluble partners until death do them part. Although it is a striking fact that a great mind may sometimes be housed in a poorly developed, or diseased, body, and a fine physique may house a small mind, the old adage remains true for the vast majority of us: *mens sana in corpore sano.*

We know a great deal more to-day about the manner in which this partnership acts than we ever did before. Especially has biochemistry thrown much light upon the interaction of mind and body. It is possible to trace all sorts of behaviour, both good and bad, to the action of hormones. But when our behaviour is social we are prone to attribute it to our virtuous minds, and when it is antisocial, when we do not, or cannot, control ourselves, we are prone to unload upon "our glands," mistaking the mere mechanism of faulty conduct for its cause.

There have been those who have strongly objected to this partnership, and have even sought to dissolve it. Porphyry, the biographer of Plotinus, tells us that this great Neo-Platonist, who taught that the material world had no real existence, "seemed ashamed to be in a body." The sentiment has not even yet died out. Some people are always apologising for their bodies, when these are the only satisfactory things about them. Nor has the hope died out that we can, by systematic torture and subjection, purge the body of ills that, in fact, belong more truly to the mind. Though the modern ascetic does not go so far as Buddha. We have the picture of him sitting "with his tongue pressed against his palate, resolutely checking, repressing, chastening his aspirations, waiting the moment when the supernatural illumination should come upon him. He struggles for a still more perfect performance by imposing the greatest strain upon his physical frame: he holds his breath; he denies himself nourishment. His body becomes attenuated by self-inflicted pain . . . and he finds himself no nearer to the goal."

Science can explain why these efforts at dissolving the partnership must be doomed to failure. The whole range of biological Science as now revealed to us must be recruited in order, not to divorce body and mind, but to "integrate the personality so that the various parts function harmoniously together as one unit." And, as I shall indicate later, this can be done by the great majority of us. Not by "saving ourselves" too much—I still omit the mental invalids—but by letting our minds function through a fairly large arc of experience. Aiming all the time at the development of what I shall call the Quiet Mind, but not at a state of Quietism. Encouraging Fancy, or mental play, so that this is never too far away from the more sober side of mental training. Fancy, "that bodies forth the forms of things unknown." Coming at last to view life as a Comedy in the sense that Balzac and Meredith used that word.

The mind of any individual is the resultant of many factors: race, tradition, heredity, physique, environment, education, discipline. Though it is true that the calibre of the mind may be severely limited by some of these factors, and especially by heredity, it is equally true that the mind is capable of enormous development during the individual's own life time. Such development may take place in various directions, leading to the production of minds of different types and different capacities.

I am not now concerned with a consideration of the heights to which man's mind may rise in special directions. I propose rather to sketch the outline of a particular aspect of mind, the *Quiet Mind*, which may be regarded as the highest product of mental hygiene. This quality of mind is one which is within the range of the great majority of mankind who start with a modicum of capacity, and yet which is capable of very great influence both upon its own life and upon the lives of others. It is a quality in the mind which balances intelligence with energy and gentleness with fortitude. Its foundation is integrity. On this foundation a diligent search for, and a strict adherence to, Truth build the house. The coping stone is control.

The final product of mental hygiene, this Quiet Mind, is not to be regarded as an end in itself but rather as a means to right conduct. Not only conduct in relation to the individual life, but to family life, to community life, to national life and to the whole brotherhood of man.

I shall try to describe some of the characteristics and expressions of the Quiet Mind and to discuss its corrective possibilities in contemporary life. And yet it is not quite true to say that I shall attempt a description, so much as try to do what is called in another place "feature" the Quiet Mind. In other words, having shown you the raw materials, and having displayed the parts, my own mental integrity demands that I should assemble the whole machine and demonstrate its horse-power.

EXAMPLES OF THE QUIET MIND

This quality of the Quiet Mind, how is it manifest? Looking around us, where can we see it? Does it exist at all in real life or is it merely a synthetic dream? It is not. We all meet folk who possess it and they differ markedly from those who don't. Granted, some of those people who have it seem to have had it from the start. Their father, or their mother, possessed it. They have not so far to go as

the rest of us in the effort to get it. There are others who have had to fight for it, because their temperaments were from the first a handicap, yet they have "seen past the agony," they have "beheld God in Heaven and have striven." In the course of history there have passed down to us the stories of many whose minds have shown this quality. When you have heard my brief selection you will perhaps say "It was *character* these men and women had." Well, I admit that the Quiet Mind, as I portray it, bulks very largely in the attribute to which we give this name. Confucius seems to have been of this nature. He considers that men's minds fall into two groups, the higher group of mind which was calm and serene; and the lower group which was constantly agitated and worried. A statesman asked for a hint on the art of governing. The Master replied: "Set the example of diligent toil." Asked for a further hint, he said "Be patient and untiring."

The prophet Isaiah must have radiated this particular quality if we may judge from his recorded utterances. Witness his advice to Ahaz, who seemed very badly to need it: "Take heed and be quiet; fear not." As a corrective to an arrogant nation he tells them that "their strength is to sit still." And to his own people: "In quietness and confidence shall be your strength." He regards "quietness and assurance" as the best end-results of a righteous life. The prophet Daniel clearly showed this quality: the lions recognised it; animals do. Paul of Tarsus must have had a bitter struggle to attain what degree of the Quiet Mind he eventually achieved. But he gave the Thessalonians a piece of advice which at least shows us what he thought of its value. "Study to be quiet and to do your own business," he said, and there could be no better text to govern mental hygiene.

I can do no more than give you glimpses of some who seem to me to have had this quality of the Quiet Mind. There was Socrates, drinking his draught of hemlock. And Galileo, though he had a slight lapse, as happens to the best of us. And Luther, with his "So help me God, I can do no other." And, in a very different connexion, Francis Drake in that thrilling scene on Plymouth Hoe. And Abraham Lincoln and the younger Pitt, both so certain of their power to save their country. There were those Quakers, whom the Indians found sitting quietly at their prayer-meeting, so undisturbed and undismayed that their fierce victors, fascinated, sat down beside them. And there was this quality about Livingstone in South Africa, and Gordon at Khartoum, and Elizabeth Fry in Newgate gaol. In quite another sphere Pasteur possessed it, doggedly pursuing his researches against all opposition, to be followed by the Curies, labouring on whilst the rain dripped through the ramshackle roof of their workroom (pathetically called their laboratory) on to their crucibles below. And there have been many others who achieved this coveted end and, by virtue of it, were leaders of men. They were able to drop "still dews of quietness" as they made their way amongst their fellows. They brought with them a coolness and a balm, and their fellows blessed them because of their tranquility and themselves became quieter and stronger. For the weak recognise the strong and lean upon them. When the strong arrive panic departs.

When we deplore the lack of a national leader what is it that we really want unless it be this Quiet Mind?

We cannot grant it to Carlyle; his was a temperament upon which the graft never really "took." And the poignancy of this fact seems to show itself through the lines of his apotheosis of Silence and Secrecy. Of these he says:—

"Altars might still be raised to them. Silence is the element in which great things fashion themselves together, that at length they may emerge, full formed and majestic, into the daylight of Life which they are henceforth to rule. Silence and the great silent men scattered here and there, each in his department; silently thinking, silently working; whom no morning newspaper makes mention of, they are the salt of the earth."

But of these examples I have quoted it may be said: "these were great, as well as quiet, minds." Can we also achieve it? And the answer is "Yes." But how? Well, not by doing "some great thing." "Why were the saints saints?" someone asked. And the answer came: "Because they were cheerful when it was difficult to be cheerful, and patient when it was difficult to be patient. They pushed on when they wanted to stand still, and kept silent when they wanted to talk." That was all. So simple, but so difficult. A matter of mental hygiene.

THE UNQUIET MIND AND ITS DISCIPLINE

So many of us unload on to our bodies, seeing in them deterrents from mental hygiene. "Make my body well," says one, "and I will tidy up my mind." And the answer so often is: "Tidy up your mind and your body *will* be well." "But what *is* the matter with me?" asks another, and the cryptic reply comes: "your face . . . break up that set and furrowed brow before it is too late," and a quotation from William James, who held that we don't smile because we're happy, we are happy because we smile. (That indissoluble partnership I spoke of just now). It is so long since some people have smiled that happiness and they have become strangers. Of them it cannot be said: "Then are they glad because they shall be quiet."

These are some of the signs by which we judge the *absence* of the Quiet Mind. There are others. "You don't think me nervy, do you, doctor?" fiddling with the inkpot and showing the bitten nails; or walking up and down the room instead of sitting in the obvious chair; or lying on the couch supporting the head in mid air by the hand, though we have placed the cushion in position quite comfortably three times; or being unable to tell their story until they are allowed to smoke a cigarette? Not nervy, indeed!

This anxiety state must be resolved; that is the mental equivalent of breaking up the set and furrowed face. It may need some expert help, though not as often as is nowadays supposed. The psychotherapist himself, both amateur and professional, now and again needs to be extricated by common sense from the web of his own doctrinaire difficulties. You remember the story of Grimaldi, the clown? "Go and see Grimaldi" said the doctor to the anxious, nervy patient after hearing the recital of his woes. "But I *am* Grimaldi!" said the patient.

Well, there are things we can do, and some of them might even be called "first aid"—remedies that any fool can apply. Relaxing, and all that. *Why* are your muscles so tense? *Why* do you fidget so? *Why* are you so restless? *Why* do you walk up and down and repeat yourself so often? *Why* do you escape from yourself by so much talk, and then complain that you are always tired?

At this and at every moment in Time there are

things to do, physically and mentally. Now is what matters. Don't spend it over that residue of old troubles which has either never been properly buried or which is still frequently exhumed for morbid examination. "But how can you expect me to be fit, ?" says one of you, "when I had that severe illness fifteen years ago?" Or "that operation which took so long to do, and left the surgeon so tired?" It may be necessary in the case of the psychoneurote that he and his doctor should delve into the unconscious for that hidden memory which still holds his mind in chains. With most of us the converse applies: freedom comes through a blessed forgetfulness.

Then there is that important matter of routine in the mental life. Just as there is such a thing as occupational fitness on the physical side, which makes "jerks" unnecessary, so there is occupational fitness on the mental side. Every man's mind should be so engaged at 9 o'clock in the morning that, if it were not, he would either miss his next meal or let someone else down very badly, or (preferably) both.

There are many old maxims which are applicable to this business of self-discipline, and none of them should be despised because it is old. It is easier to get a hearing for things that are new than to get conviction for things that have been said already. All the same, I do not want this address to drift into a homily. Suffice it to say that the attainment of control has no new technique and, indeed, no royal road. There is one last thing to say about it, however, and that is this: just as in physical training, so here, the finer technique which comes later comes both more easily and more smoothly and the results are much more interesting.

AN UNQUIET WORLD

It must be allowed that the conditions for embarking upon mental hygiene are by no means so helpful as they were when the stoics undertook the task.

There seems no doubt whatever that a certain aloofness, a withdrawing of the mind at times from the busy-ness of life is a requisite to mental hygiene. The philosophers have always insisted upon this, and the Christian Church has enjoined and practised quiet meditation in solitude for centuries. The most modern of all religious groups makes the "quiet hour" a *sine qua non*. The apostle Mark, in his matter-of-fact' way, explains that the reason Jesus bade the disciples to "come into a desert place" was because "there were many coming and going, and they had no leisure." The trouble is that even a fragment of "life which is private, hidden, solitary, closed to public view, becomes more difficult every day. The situation has certain characteristics which are obvious to the senses. Noise in the street, for instance—the street has become stentorian. One of the privileges which man used to take for granted was silence. Now his right to a certain amount of silence is recognised no more. The street penetrates into our own private corners and fills them with public clamour. He who wishes to meditate must get used to doing it submerged in the midst of a public racket, a diver in an ocean of collective noise. Man is never left alone by himself. Whether he likes it or not, he must be with others. The public square and the avenue force their anonymous clamour in through the very walls of his home."

(You will think these last few sentences are mine, because they voice a sentiment sympathetic to one of my own activities. But they are not mine; they are taken from a book by the Spanish writer, y Gasset.) As I said the other day, quoting a friend, the *inescapability* of noise has become one of its worst terrors.

The herd instinct seems to have taken charge for the time being. Men "devote themselves passionately to whatever there is left in them of the sheep. They want to march through life together, along the collective path, shoulder to shoulder, wool rubbing wool, and the head down. This is the reason why so many European peoples are looking for a shepherd and a sheep dog."

We must recover our ability to be sometimes alone; it is imperative. Only our "seclusion must not be mechanical, but spiritual, that is, must be elevation. At times the whole world seems to be in a conspiracy to importune you with emphatic trifles. Friend, client, child, sickness, fear, want, charity, all knock at once at the closet door, and say,—'Come out unto us.' But keep thy state; come not into their confusion."

ESCAPISTS AND DICTATORS

Some people side-track the pursuit of the Quiet Mind, as I have described it, either from laziness, or selfishness, or from mistaken zeal.

There are many ways of attempting an escape from the rigours attaching to mental hygiene, and there are many ways of escaping the responsibilities of using our minds in the service of others. Many of the methods may seem to justify themselves to the escapist. Escape may be made by the individual or by a group, by the single citizen or by a nation. Drink may be an escape for the individual, as dope may be. Hard and uninterrupted work, or play, all day long or, indeed, needless sleep. Illness of the factitious sort, with or without operations. On a higher plane it may be so ardent a pursuit of the religious life that no time is left to live it, or a mistaken view of charity—"saving her soul on us."

An individual, or a group, may excuse himself, or themselves, from participation in what may, and not without reason, be called a dog-fight in which others are engaged. But in most, though not in all, dog-fights there is an under-dog, and this is a point that is so often conveniently overlooked. "But who is my neighbour?" . . . "A certain man . . . fell among thieves." A nation may preserve an isolationist attitude on the ground that a landslide in international probity elsewhere is sufficiently remote to excuse participation except by the ineffective expression of non-approval. But if a stand for integrity in international dealings is only made when it is clearly seen that the vested interest of that nation is directly and immediately concerned, the momentum gained by another nation that finds no opposition to methods of "violence and illegitimacy" may have become irresistible.

If one should ask "how is it that other social forces allow a triumph of juridical chaos?" the answer is "for the simple reason that no important social forces show an enthusiasm for the law as a live issue." "If there is no single institution which warms all hearts the victory goes to one which despises all existing forms and institutions and occupies itself with other things."

Any force is strong whose enemy is weak. That is what makes dictators strong. They are negative forces; they batten on the weakness of others. "For this reason they are essentially transitory—

which does not necessarily mean that their stay will be short."

* * *

All this time you may be saying: "A quiet mind! A quiet mind with the world in its present state? Have you seen the morning paper? Have you seen the *evening* paper? You evidently didn't sit up to hear the latest news—(copyright reserved)?" To which I reply, "It is *because* of the state of the world, and it is (especially) *because* of the morning and evening paper, that this Quiet Mind is so essential. It may just save the world,—in spite of the morning and evening papers . . ." Morning and evening "we lay waste our powers . . ."

There are other problems than the international problem; there is the problem of a man's own confused mentality, and there are confused domesticities, too. And children, how imitative they are, and how reliant upon strength and serenity in their seniors. What a disservice we shall be doing to the future if our children, who will form it, reflect the unquiet of our own minds. We dare not escape this individual responsibility of mental discipline and of the attainment of the Quiet Mind.

I spoke just now of isolationist countries. Does such a topical reference need excuse? Surely not. None of us can remain *spiritually* isolationist; none of us in this country has, thank God; but our maintenance of the Quiet Mind is unfortunately conditioned, especially just now, by things as they are in the world.

All the more vital is it that we should hold on to the spiritual values, and harbour them, not in "the old unquiet breast" but in a mind that strives all the more for "plainness and clearness without shadow of stain," because these values have gone temporarily awry elsewhere.

JUVENILE RHEUMATISM: THE THERAPEUTIC ASPECT*

By Wilfrid Sheldon, M.D., F.R.C.P. Lond.

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The word rheumatism is so widely used by medical as well as lay people, and has come to cover such a variety of symptoms in adults as well as children, that some preliminary definition of the term juvenile rheumatism is necessary. This term, as I understand it, embraces three clinical conditions: acute rheumatic arthritis (in this country called rheumatic fever); rheumatic disease of the heart, with which must be included such occasional complications as rheumatic pneumonia, subcutaneous nodules, and the rheumatic skin rash, erythema marginatum; and rheumatic chorea. For some years now a fourth group of symptoms has been spoken of as subacute rheumatism and has even been supposed to indicate a pre-rheumatic state, implying that children with these symptoms are particularly prone to acquire one of the three forms of rheumatic manifestation given above. The main symptoms in this fourth group consist of vague aches and pains in the muscles of the limbs and in the neighbourhood of joints, often combined with such common evidence of debility as anæmia, irritability, and fatigue. Analysis of the after-history of large numbers of children in this group has convinced me that these pains are no more than the accompaniments of a condition of debility that may come about for a great variety of reasons but do not in actual fact render the children particularly liable to suffer from one of the three more serious forms of rheumatism. In his recent summary of ten years' experience in the Supervisory Rheumatic Clinic at Cardiff, Anderson (1936) comes to a similar conclusion, stating that pains in the limbs are by themselves not to be taken as evidence of rheumatism. At the present time large numbers of children in this fourth group are under observation in our various rheumatism supervisory clinics, where if the label of rheumatism is firmly attached to them, they are likely enough to develop an unwarranted sense of invalidism. The time has come when we should cease to apply to these symptoms of debility the same term that we use for heart disease and chorea.

Facilities for Treatment

The treatment of the acute phase of the disease is carried out either in the child's own home or in hospital. But rheumatism, especially as it affects the heart, is a disease from which recovery is slowly made, and the management of the long convalescent period may be said to rival in importance the care of the acute phase. Largely owing to the inspiration of that great pioneer of rheumatism in childhood, Dr. F. J. Poynton, facilities in this country for the organised control of the period of convalescence of children recovering from an attack of rheumatic carditis have developed rapidly during the last decade. Special country homes have been set up where these children may spend many months under skilled supervision, going through a graded convalescence until eventually they become fit to resume life in their own homes. The value of these homes is immense, and moreover, the observation of rheumatic children over many months and under ideal conditions has led to advances in our knowledge of the disease, as witness the writings of Dr. Bernard Schlesinger, based on his experience at the West Wickham Heart Home.

In general, the work at these homes is conducted on the following lines: the children are admitted either from their own homes or from a general hospital, and are kept at rest in bed until the inflammation in the heart is judged by clinical standards to have settled down. Help in deciding this question is given by the daily charting of the pulse-rate, and by regular weighings, for a steady increase in weight is valuable evidence that the rheumatic process is quiescent. In some homes there are facilities for the regular estimation of the sedimentation-rate of the red cells. In the absence of other infections that may elevate the sedimentation-rate, this test is a delicate index of the state of the rheumatic process, and the child should not be allowed up until the rate of sedimentation has dropped to a normal level (less than 10 mm. in the first hour). In passing, it may be mentioned that active chorea uncomplicated by other rheumatic manifestations leaves the sedimentation-rate normal, one of the many small points in which chorea differs from the other manifestations. From the first grade of rest in bed the child passes through five or six grades of increasing activity, beginning with sitting up out of bed for a short time each day, and finally reaching a top grade in which the child is up all day except for a middle day period of rest, and is able to take part in simple games and exercises. The progress from a lower to a higher grade is governed by the

* Based on the opening remarks at a discussion at the International Congress on Rheumatism and Hydrology at Oxford on March 30th.

clinical condition together with the additional aids I have just mentioned, and it may cover a period of six months or more. Education at these homes is a valuable asset, so that although the child is away for months from ordinary schooling, it is not neglected. Before he returns home such important questions of home management as whether he is able to walk up stairs, to take part in games and exercises, to attend an ordinary elementary school or a special school for physically defective children, have been answered. In many of our cities the child on returning home continues to attend a rheumatism supervisory clinic where the progress of the rheumatic state is observed. Eventually when the child reaches school-leaving age, the question of employment suited to the capacity of the heart is considered at these clinics. In this way there is now a scheme of organised supervision for many of our rheumatic children, which lasts from the inception of their illness throughout childhood.

Treatment

Although many different lines of therapy have been attempted, no outstanding or recent advances have been made in the treatment of children during an attack of acute articular or cardiac rheumatism. Rest in bed remains our sheet anchor. In the severest cases rest must be absolute, and the child must not be allowed to do anything for himself; it is at this stage that the value of expert nursing is so great. While recumbency is desirable, the position in bed must be such as to give the child maximum comfort, and when in addition to active carditis there is some degree of mechanical failure from previous attacks of rheumatism, the child is often more comfortable propped up on pillows. There are those who hold that every case of rheumatic arthritis is accompanied by some degree of carditis, even though it may not reach a degree sufficient for clinical recognition; for cases of this sort a month in bed should be the minimum period; when the heart is clearly affected the rest must be longer, and I have already indicated how we may determine when the time has come to begin getting the child up.

As to dietetic treatment, there is no good evidence that any particular food is harmful and therefore the diet should be as sustaining as possible, attractively served, and suited to the child's digestive capacity. The vitamin intake must be safeguarded, and so long as the child is not nauseated, vitamins A and D in the form of cod-liver oil have seemed beneficial. Recently Abbasy, Hill, and Harris (1936) have shown that children with acute rheumatism excrete a subnormal amount of vitamin C, but this is not peculiar to rheumatism, and Schultz (1936) has demonstrated that specific treatment with ascorbic acid, given orally and intravenously, does not influence the course of the disease.

DRUGS

Salicylates.—Since the introduction of salicylate some 60 years ago no drug has maintained such popularity in the treatment of acute rheumatism. The effect of salicylates has recently been reviewed by Murray-Lyon (1936). Provided that the dose is adequate, there is no doubt that the natural course of the disease is considerably curtailed, as judged by the subsidence of the articular inflammation and the return of the temperature to normal. The ideal dose is one that will give these results in the shortest time without producing toxic symptoms. To a child 10–15 grains of sodium salicylate may be given every 3 or 4 hours with the expectation that the symptoms will subside in two or three days, but it is necessary to continue the drug in smaller doses for a further two or three weeks, otherwise within a day or two of stopping it the temperature may rise again and joint pains recur. When salicylate is being pushed in these doses, it is a wise precaution to prescribe double the amount of alkali (sodium bicarbonate), otherwise toxic symptoms such as vomiting, giddiness, and rapid breathing, all of which are evidence of salicylate acidosis, may develop. Whether salicylate exerts any beneficial action on rheumatic carditis is still a matter of opinion; the fleeting joint pains that often accompany active carditis are as a rule quickly relieved by salicylate, and sometimes precordial pain as well, but there is no good evidence that recovery from the inflammatory process in the heart is hastened. Experience shows that in the most severe cardiac cases the temperature often tends to be normal or subnormal, and to produce this effect artificially by salicylate may leave the child weak and with less recuperative power. The use of salicylate in uncomplicated chorea is disappointing. One may sum up by saying that salicylate combined with alkali should be pushed in acute articular rheumatism, and may be used in smaller doses for the relief of pain in carditis, although in this condition a curative effect is not to be expected.

Aspirin has to some extent replaced sodium salicylate, but its effect is no greater, and it has the disadvantage of being incompatible with alkalis. Once the urgent symptoms of acute rheumatic arthritis have been subdued, a dose of 5 grains of aspirin three or four times a day offers a useful means of maintaining the salicylate effect, but if it is employed in the larger doses required to overcome acute arthritis, toxic symptoms may easily arise. A rapid hissing respiration is the most noticeable of these. Occasionally the alleviation of rheumatic fever expected from salicylate fails to materialise, and then Tolysin (Neocinchophen) may be used instead. It is prescribed in the same dose as salicylate and is admittedly less toxic. It has seemed particularly useful in children who have an already badly damaged heart and are undergoing a relapse of carditis accompanied by precordial or joint pains.

Pyramidon, although used extensively abroad in the treatment of acute rheumatism, has not gained popularity in this country, except perhaps in the treatment of chorea in which its quieting effect is often valuable. It is particularly beneficial when the movements are so violent as to render the child sleepless and exhausted. The association of pyramidon with agranulocytosis is likely to make doctors still more chary of using it, although in actual fact this unfortunate association is met with in adults rather than in children.

Nirvanol (phenyl-ethyl-hydantoin) is another drug which has found more favour abroad than in this country. Its use is mainly confined to the treatment of chorea, for there is little evidence that it exerts a beneficial effect on other rheumatic manifestations. Poynton and Schlesinger (1931) have reported the disappearance of subcutaneous nodules under nirvanol therapy, although of course it is known that these nodules may disappear spontaneously within a day or two, and they further point out that the use of this drug in severe carditis may precipitate a relapse, such as pericarditis. Even its use in chorea is open to the objection that to be effective it has to be given in poisonous doses sufficient to evoke a "nirvanol reaction" consisting of fever, a rash, and eosinophilia. Mental confusion may persist

for some weeks afterwards, and fatalities have been recorded. One may well hesitate to employ a drug with these capabilities in the treatment of a disease which under rest and symptomatic treatment spontaneously recovers.

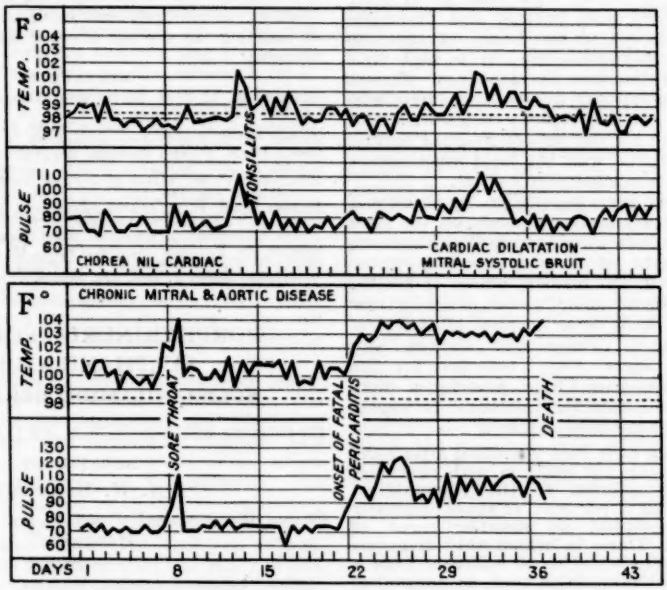
Sulphanilamide.—The good results obtained from this drug in the treatment of hæmolytic streptococcal and other infections has led to its use in acute rheumatism. My own experience of it in this connexion has been disappointing, for it does not appear to influence the course of acute carditis, although in two cases of rheumatic pneumonia in which the temperature had been swinging daily over several degrees, the fever subsided after giving the drug for 48 hours. The value of sulphanilamide to a rheumatic child who has a sore-throat, given with the object of preventing a relapse of rheumatism, requires investigation.

VACCINE AND SERUM THERAPY

Various attempts have been made to treat acute rheumatism by means of sera and vaccines, but the results to date have been inconclusive, the beneficial effects claimed by some workers being balanced by the adverse experience of others and by the warnings given from time to time that these methods are not without danger. These difficulties are likely to continue until the causative agent of acute rheumatism has been firmly established.

In recent years evidence has accumulated to show that infections with hæmolytic streptococci most commonly forerun an attack of rheumatism, but even if they are a causative agent, the mechanism by which they produce a rheumatic reaction is not clearly understood. Swift and others (1931) have pointed out an analogy between some of the symptoms of serum sickness and acute rheumatism, and from the standpoint that the rheumatic phenomena may be an example of hypersensitivity to the lytic products of streptococci, have used a streptococcal vaccine as a method of desensitisation. The vaccine consisted of hæmolytic streptococci, and was administered intravenously in increasing doses. Their claims for the treatment were guarded. In 1932 Collis and I employed intravenous vaccination with hæmolytic streptococci in a group of 47 rheumatic children at the Cheyne Hospital and at Great Ormond-street. The initial dose was 200,000 organisms per c.cm. and this was increased over a series of 16 injections to a dose of 100 million organisms. It was found that a relapse of rheumatism could occur while the treatment was in progress, and if the treatment was given to cases of active heart disease an increase in the rheumatic condition might appear within a few days. Perhaps the fact that the treatment was abandoned after a few months' trial may be allowed to speak for itself.

Antistreptococcal serum has also been used by various workers in acute rheumatism, but with conflicting results. For instance, Eason and Carpenter (1937) have recently employed antiscarlatina serum in acute rheumatism, polyarthritis, and chorea, and regard it as an effective therapeutic measure particularly in cases that have proved resistant to salicylate, and they hold that it is safe to give serum even in the presence of grave carditis. They took the precaution of testing for sensitivity before giving the serum. On the other hand, Hitchcock, McEwen, and Swift (1930), using antihæmolytic streptococcal serum, went so far as to say that "were salicylate as ineffectual as serum in this condition, its use would long since have been abandoned." Others have also noted that while many rheumatic children can receive a foreign serum without accident, now and again severe and fatal relapses of rheumatism may be provoked. Clearly we are not in a position at present to advise the wide use of foreign serum.



Temperature charts of two rheumatic children showing a relapse of acute rheumatism, mild in one case, fatal in the other, occurring in the third week after a sore-throat.

It is perhaps surprising that no extensive trial of human convalescent serum has as yet been reported, especially as recent investigations have suggested that a virus infection may be the ultimate cause. One difficulty is that acute rheumatism is very likely to relapse, and it is not known whether patients who struggle through to recovery attain thereby a state of even temporary immunity. Archer (1936) comments favourably on this method of treatment in 4 cases, but unfortunately furnishes no details of the rheumatic state of the donors.

Prevention

The prevention of a disease that causes so much suffering, disability, and death as does rheumatic carditis must be the concern of us all, but once again we are hindered by the lack of knowledge of the causative agent. It is well known that juvenile rheumatism falls particularly upon the children of the artisan class, and it may be expected that the various health measures designed to overcome adverse living conditions, such as overcrowding, badly ventilated

and damp dwellings, and inadequate dietary, will help to lessen the incidence of this disease.

As to prevention for the individual, there must surely be an opportunity in the interval of 1–4 weeks that elapses between an acute infection such as a sore-throat and subsequent rheumatism. This interval is illustrated by the temperature charts (see Figure). There is some evidence to suggest that 20–30 grains of aspirin daily throughout this period may prevent or at any rate mitigate the subsequent rheumatic attack, but although it may be wise to do this for a child who, being already rheumatic, has a sore-throat, it is not practical to extend it to all children after an acute throat infection.

As soon as the existence of the interval just described is appreciated, it follows that a sore-throat must act as a warning of the possible development of rheumatism within the next four weeks, and therefore a close observation of children during this period should bring to light instances of rheumatic heart disease at their very beginning. It may be said that to make an early diagnosis does not amount to prevention, but it would seem that when early diagnosis is combined with prompt and prolonged treatment, the prospect of the heart returning to normal is considerably enhanced. It is high time that our health authorities developed an efficient system of following up for a month children who have a sore-throat. In this country such work would be well undertaken by the school medical service operating in conjunction with the local practitioners and with a rheumatism supervisory clinic.

During the last six years prevention, or perhaps it would be better to say early diagnosis, on the lines indicated above has been attempted in Walthamstow, one of the boroughs of Greater London, where Dr. A. T. W. Powell, the medical officer of health, has examined all patients under 15 years of age on their discharge from the local fever hospital after scarlet fever and diphtheria. Those who showed any abnormal cardiac signs were referred to the Walthamstow Rheumatism Clinic, first for a more precise diagnosis, and then for treatment or supervision. The results have been as follows :—

In all 3050 children have been examined after leaving the fever hospital; 153 children with abnormal cardiac signs were referred to the Rheumatism Clinic, and of these 33 (1 per cent. of those originally examined) were accepted as showing signs of rheumatic carditis. Those in whom this diagnosis was not accepted were found to be suffering from a variety of cardiac abnormalities such as congenital heart disease, nervous tachycardia, and functional bruits. These were kept under observation for a period varying from three months to four years, but evidence of rheumatic carditis did not materialise in any of them. Turning to the 33 children with early involvement of the heart, in 22 there was evidence of dilatation, and in 26 there was a systolic murmur at the apex conducted to the axilla. A short sharp first sound but no murmur was present in 5, and 5 had a mitral diastolic as well as a systolic murmur. Treatment at home, or in hospital, or in the special country heart homes was arranged for these, followed by supervision at the Rheumatism Clinic on their return to school. A follow-up could not be maintained in 7 of these children, either because the parents had left the district, or from difficulty in obtaining coöperation. Of the remaining 26 no less than 15 are regarded as having recovered completely, that is to say there is now no clinical evidence of any abnormality in the heart.

Even if we assume that carditis has persisted in the 7 cases not followed up, we are left with a recovery-rate of 45 per cent., which I submit supports the contention that the early diagnosis of rheumatic heart disease combined with prompt treatment and prolonged supervision makes for a much improved prognosis.

As would be expected, the prognosis was least satisfactory in those cases showing a diastolic as well as a systolic murmur. The after-history of these children has been as follows :—

One child after four years is developing signs of mitral stenosis; another was under observation for two years and then left school, at which time it was noted that there was a long mitral systolic murmur and shortness of breath on exertion. The third and fourth children had organic mitral systolic bruits after three and five years respectively, but were able to take part in full games and exercises at school, while in the fifth child the heart appeared perfectly normal after 18 months and has remained so for a further two years.

The points in this investigation which I would like to emphasise are that a follow-up of children who have had an acute sore-throat can be organised by public health authorities, that the diagnosis of early heart disease is to be expected in only about 1 per cent. of the children examined, and that this method of tackling the disease offers a means of limiting its ravages.

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PORPHYRINURIA FOLLOWING SULPHANILAMIDE:

SULPHANILAMIDE DERMATITIS*

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THE antistreptococcal drugs of the benzene-sulphonamide series—Prontosil, sulphanilamide and their derivatives—are finding extensive employment in clinical practice, but not without the appearance of toxic symptoms in a varying proportion of cases. Cyanosis, methæmoglobinæmia, and sulphæmoglobinæmia are very commonly observed, even during treatments of short duration, but when the dosage has been higher and the treatment more prolonged, symptoms of a more alarming character have not infrequently appeared. Among these may be mentioned nausea, vomiting, colic, anæmia, icterus, hæmoglobinuria (Kohn 1937), polyneuritis (Hüllstrung and Krause 1938), agranulocytosis and a dermatitis or toxic rash (compare Douthwaite 1937). A precipitate fall in the number of red blood-cells has also been recorded, without at the same time any evidence being discernible of hæmolysis or icterus (Jennings and Southwell-Sander 1937).

* A preliminary announcement of the results of this work was made before the Biochemical Society on Jan. 14th (see *Chemistry and Industry*, 1938, **57**, 87).

These toxic manifestations have been discussed in several recent reports, but it is a matter of some difficulty to gauge their frequency, since different dosage schemes have been employed by different investigators (Crean 1937, Jennings and Southwell-Sander 1937, Cokkinis 1937, and Fitch 1937). Snodgrass and Anderson (1937), using for erysipelas patients an average dose of 41·6 grammes spread over 14·4 days, reported the following frequencies of toxic symptoms: cyanosis 29·6 per cent., toxic eruptions 2·2 per cent., drug fever 2·2 per cent., severe vomiting 1·5 per cent. Colebrook and Purdie (1937) in 106 puerperal cases observed cyanosis in over a half, a recurrence of pyrexia in nearly a third of the non-fatal cases, slight jaundice in 2 cases, and occasional transient skin eruptions.

Of particular interest is the rash or dermatitis which has appeared in a proportion of cases (6 per cent. in the series of Schwentker and Gelman, 1937), and which has been clearly shown in several instances to be associated with exposure to sunlight (Menville and Archinard, 1937; Newman and Sharlit, 1937; Frank, 1937). In the majority of cases the rash has been described as a purpuric, scarlatiniform or maculopapular eruption developing on about the 8th or 9th day of treatment and affecting principally exposed skin surfaces such as the face and neck, backs of the hands, &c., although it may spread to such a degree as to involve the whole of the trunk. Upon withdrawal of the drug, the eruptions have generally subsided within a few days (compare, however, Finney, 1937), but by further dosage they could once more be elicited (Unshelm, 1937; Goodman and Levy, 1937; Newman and Sharlit, 1937). This circumstance combined with their somewhat capricious appearance has led several investigators to postulate an individual idiosyncrasy of the affected patients towards the drug employed (e.g., Schonberg, 1937). Experiments designed to reveal an allergic response have, however, consistently failed (compare Goodman and Levy, 1937).

That sunlight appears to be a contributory factor in a sulphanilamide rash would suggest that the patient has become photosensitised, and Brunsting (1937), working upon this hypothesis, reported two analyses of urines from dermatitis cases in which he found urinary porphyrin to be increased. His results cannot be considered as more than suggestive, since it is a well-known fact that many states of fever or infection lead to increased porphyrin output.

Up to the present the most complete study of the pharmacological actions of sulphanilamide is that of Hawking (1937), but this investigation was only concerned with the acute toxic effects. The symptoms of poisoning he records in cats and rabbits, following 1·5 to 2 g. of sulphanilamide per kg. body-weight, recall the condition of decerebrate rigidity and bear little resemblance to the toxic effects experienced by human patients.

Hageman (1937) has investigated the effects upon mice of sub-lethal doses of prontosil or sulphanilamide administered over periods up to 14 days in length, the animals being killed and their livers, kidneys, spleens, and bone-marrow, taken for histological examination at varying periods after the drug was discontinued. No noticeable lesions were present in the liver or kidneys, but the number of eosinophil cells in the bone-marrow was increased even after one or two days of sulphanilamide treatment. Deposits of hæmosiderin were found in the spleen, the quantity increasing with the total dosage and the duration of life after treatment. This fact led Hageman to the conclusion that the pathological changes responsible for the accumulation of this pigment were progressive, and continued even after the drug was stopped. As a result of the present study upon porphyrin excretion, we are led to a somewhat similar conclusion.

Since increase in porphyrin excretion can be accepted as indicating a disturbance in hæmopoiesis or in liver function, it was decided to investigate more closely the effect of sulphanilamide (*p*-aminobenzenesulphonamide) on such excretion when administered to patients undergoing treatment for infection with hæmolytic streptococci, and also when given to normal healthy rats maintained on a constant, artificial diet.

Clinical Observations

Through the kind coöperation of physicians and hospital staffs, a number of 24-hour specimens of urine from patients undergoing sulphanilamide treatment were made available to me (C. R.) for porphyrin determination.

A 1 litre sample of the specimen is acidified with 100 c.cm. of glacial acetic acid and the mixture extracted by ether for 8 to 12 hours in the continuous extraction apparatus of Kutscher and Steudel. The use of such an apparatus affords a saving in both time and solvent and guards against the formation of troublesome emulsions. It can, however, be dispensed with, the acidified urine being shaken instead with two consecutive 1 litre volumes of ether in a large separatory funnel. The ether-soluble porphyrins of the urine are extracted completely by this procedure. The ether extract is washed several times with water to remove acetic acid and then shaken with 2 c.cm. portions of 5 per cent. (by weight) hydrochloric acid until no further porphyrin is removed (controlled by spectroscopic examination or fluorescence in ultra-violet light). Usually, two successive shakings suffice to extract the porphyrin completely. Quantitative determination is best effected by comparison of the intensity of the 550 mμ absorption band in the acid solution with that of a standard containing 1 mg. of coproporphyrin in 100 c.cm. of 5 per cent. hydrochloric acid. Comparison may be carried out in a Zeiss comparison spectrocolorimeter, or by the simple expedient of diluting the unknown progressively to match the standard, both solutions being contained in test-tubes of approximately 1 cm. diameter, and viewed by a pocket spectroscope such as the Browning. An example illustrates the calculation involved.

Volume in 24 hours = 1620 c.cm.
Sample taken = 1000 c.cm.
Extract diluted to 10·4 c.cm. to match standard.

$$\therefore \text{ Porphyrin content} = \frac{10{\cdot}4 \times 1620}{1000} = 169\,\gamma$$

The experimental findings are given in Table I. The normal daily output of urinary porphyrin lies between 0 and 50 γ, values outside this range being regarded as abnormal by Schreus and Carrié (1933). It will be seen that in nearly every instance patients receiving sulphanilamide at the time of, or immediately prior to, collection exhibited a striking increase in the amount of porphyrin in the urine, values up to nearly ten times the normal maximum being recorded. This porphyrinuria was even maintained to a large degree for some time after the drug was discontinued. Since sulphanilamide is said to be rapidly excreted from the body (Marshall, Emerson, and Cutting, 1937a, b) such continued excretion of porphyrin suggests that the abnormality must be due to a lesion of some persistence. Attention may be drawn to Case 6, treated for puerperal sepsis by 9 g. of sulphanilamide spread over three days. After withdrawal of the drug there was a marked fall in porphyrin excretion, but on the fourth day the figure returned

to a high level. No more determinations were possible since the patient was discharged at this juncture.

Included in this series is a case (No. 9) which exhibited a well-marked toxic rash. The patient had received only 4·5 g. of sulphanilamide for a septic throat and had been discharged from hospital.

TABLE I—URINARY EXCRETION OF ETHER-SOLUBLE PORPHYRIN (24-HOUR PERIODS) DURING OR AFTER SULPHANILAMIDE TREATMENT

Case.	—	Dosage.	Urine volume (ml.).	Porphyrin content (γ).	Temp. during collections.
1	Puerperal septicæmia (24 hr. after drug stopped).	21 g. in 7 days.	765	246	99·4°–101° F.
2	Puerperal septicæmia.	49 g. in 11 days.	1800	10	97°–98° F.
3	Puerperal septicæmia.	51 g. in 11 days.	1830	205	100°–101·2° F.
4	Scarlet fever. Marked sulphæmoglobinæmia (24 hr. after drug stopped).	24 g. in 4 days.	1250	140	97·4°–98° F.
5	Puerperal septicæmia. Rash 4 days before (5 days after last dose).	44 g. in 8 days.	2430	50	..
6	Puerperal septicæmia.	9 g. in 3 days. (Dec. 11-14)			
	Prior to dosing Dec. 10–11	..	1780	127	103° F.
	During " " 12–13	..	1630	140	Normal.
	" " " 13–14	..	950	142·5	"
	Day after " " 14–15	..	1400	77	"
	2 days " " " 15–16	..	575	About 5	"
	4 " " " " 17–18	..	1620	169	"
7	Sinusitis.	Prolonged dosing.	1025	126·2	..
8	Septicæmia after accident, prolonged fever.	150 g. at intervals over 6 wk.*			
	During dosing Dec. 15–16	..	1200	463	..
	Day after " " 17–18	..	1100	184·7	..
	Intermittent dosing " " 22–23	..	850	222·5	..
	Intermittent dosing Jan. 2– 3	..	825	386·7	..
9	Tonsillitis. Rash 2 days after dosing stopped.	4·5 g. in 2 days.			
	8-hr. specimen 4 days after dosing stopped (Jan. 4).	..	340	18 (54 in 24 hr.)	..
	Jan. 4– 5.	..	1340	42·2	..
	" 5– 6.	..	720	16·6	..
	" 6– 7.	..	450	55	..
	" 7– 8.	..	2365	32·3	..
	" 8– 9.	..	2040	165·8‡	..
	" 9–10.	..	670	Trace.	..
10	Puerperal septicæmia.	15 g. in 5 days.	2210	55	..
11	Septic throat.	7 g. in 4 days.†			
	Jan. 7– 8.	..	550	75	..
	" 8– 9.	..	400	44	..
	" 9–11.	..	1220	92·4	..
	" 11–12.	..	710	42·6	..
	" 12–14.	..	1400	204	..
12	Septicæmia, Jan. 13–14.	..	500	357	..

* Plus 19 g. red Prontosil (Nov. 8–Dec. 16).
† Last dose Jan. 7, pronounced sulphæmoglobinæmia.
‡ Hæm. strept. A sore-throat. Urine dark brown.

She returned the following day with a rash which affected the greater part of the trunk, and was put to bed under observation. Urinary porphyrin analysis from the 4th until the 6th day after the drug was stopped showed figures declining from a value slightly above the normal level. It was decided once more to test the patient's reaction to sulphanilamide and accordingly urine specimens were collected and analysed daily. No irregularity was observed except that on Jan. 8th and 9th the porphyrin figure rose to 165·8 γ, only to fall again markedly the following day. Upon inquiry, it transpired that the original plan had been abandoned, since mammary carcinoma had been diagnosed and immediate operation was contemplated. On Jan. 8th to 9th, however, the patient had developed a severe hæmolytic streptococcal (type A) sore-throat. It was on these days that an increase in porphyrin excretion was registered, a circumstance emphasising again the necessity of studying the action of a drug upon healthy normal organisms.

Observations on Rats

It was felt that the action of sulphanilamide upon the hæmopoietic system could only be properly studied in healthy organisms. Adult white rats weighing about 200 to 250 g. were placed in groups of three in metabolism cages and their urine and fæces were collected over three-day intervals and analysed for ether-soluble porphyrins. A few drops of toluol were added to the urine collection flasks to prevent bacterial growth. The *standard diet* was as follows:—

Casein, 20 per cent.; rice starch, 73 per cent.; salt mixture, 2 per cent.; yeast powder, 5 per cent.; cod-liver oil 20 c.mm. per rat per day.

Salt mixture: sodium chloride, 41·6 g.; magnesium sulphate, 130·2 g.; acid sodium phosphate, 83·2 g.; potassium phosphate, 228·8 g.; calcium biphosphate, 129·6 g.; ferric citrate, 47·2 g.; calcium lactate, 146·2 g.

Each animal received 10 g. made into a paste with 10 c.cm. of water. The food was offered to each rat individually for one hour in the morning and anything remaining for one hour in the afternoon (a single two-hour period on Saturdays and Sundays), the uneaten residue being then weighed. The drug was administered by admixture with the ration and in this way the exact intake of each individual could be computed (see Table II). A pre-period was included for each group and a group of three rats served as controls. Body-weights were recorded throughout the experiment.

TABLE II—DOSAGE OF SULPHANILAMIDE PER RAT

—	Amount added to daily ration.	Average daily amount consumed.	Total consumed.
Controls ..	Nil.	Nil.	Nil.
Group 1 (♂) ..	0·4 g.	0·307 g.	8·3 g. in 27 days.
" 2 (♂) ..	0·3 g.	0·278 g.	10·0 g. in 36 "
" 3 (♀) ..	0·1 g.	0·079 g.	2·6 g. in 33 "

The results presented in Table III show that a marked rise in urinary porphyrin excretion occurred in each group—the maximum figures ranging from twice to nearly ten times the normal. This high level of porphyrin excretion continued for some considerable time after dosage was discontinued. In the case of Group 2, determinations of urinary sulphanilamide by the method of Marshall (1937) were carried out concurrently with porphyrin determinations and tend to show that excretion of the drug in the case of the rat after prolonged dosage is not complete for some 21 days. The drug was withdrawn on Dec. 31st and excretion was as follows:—

Jan.	Sulphanilamide (mg.).	Porphyrin (γ).	Jan.	Sulphanilamide (mg.).	Porphyrin (γ).
1– 3 ..	81·0 ..	260	13–15 ..	11·9 ..	80
4– 6 ..	— ..	120	16–18 ..	11·4 ..	70
7– 9 ..	16·2 ..	85	19–21 ..	1·5 ..	60
10–12 ..	11·0 ..	84	22–24 ..	Nil. ..	60

Photosensitivity.—Attempts were made to reveal photosensitivity by exposing the animals, together with the controls, to the light of a mercury-vapour lamp after having previously shaved off the hair from the sides and back. Exposures of 5 and 10 minutes at a distance of 24 inches were unsuccessful, but all three rats of one sulphanilamide group given exposures for 10 and 15 minutes at this distance on each of two consecutive days developed typical cutaneous lesions, whereas the controls showed only a slight transitory erythema. The degree of photosensitivity appeared to be of a very low order, a fact which became readily explicable when it was found that the increased urinary porphyrin is coproporphyrin III. The series III porphyrins are known to be much less active photosensitising agents than are their series I isomers (compare Bingel, cited by Mertens, 1937b). This point is again referred to in the discussion, when considering sulphanilamide dermatitis in human beings.

TABLE III—SULPHANILAMIDE INTAKE AND PORPHYRIN EXCRETION IN RATS OF EXPERIMENTAL GROUP 1 (3 MALES). MEAN DOSE 0·307 G. PER RAT PER DAY

Date.	A: Sulphanilamide, actual intake (g.).	A: Wt. (g.).	B: Sulphanilamide, actual intake (g.).	B: Wt. (g.).	C: Sulphanilamide, actual intake (g.).	C: Wt. (g.).	Urine volume (ml.).	Urine porphyrin (γ).	Fæces weight (g.).	Fæces porphyrin (mg.).
Nov.										
8	..	240	..	211	..	270				
9							40	35·0	4·8	0·65
10										
11										
12	..	234	..	202	..	259	63	32·5	3·6	0·68
13										
14										
15							55	..	4·0	0·72
16	..	237	..	203	..	259				
17										
18							57	35·0	6·2	0·70
19	..	236	..	204	..	258				
20										
21										
22	0·475	..	0·375	..	0·400	..				
23	0·200	243	0·125	206	0·375	257	225	57·5	2·2	0·48
24	0·225	..	0·100	..	0·375	..				
25	0·238	..	0·063	..	0·250	..				
26	0·262	230	0·175	187	0·280	246	169	92·5	3·6	1·00
27	0·240	..	0·060	..	0·220	..				
28	0·340	..	0·240	..	0·300	..				
29	0·300	..	0·200	..	0·400	..	132	130·0	4·3	1·20
30	0·320	217	0·200	175	0·400	232				
Dec.										
1	0·240	..	0·160	..	0·220	..				
2	0·380	..	0·220	..	0·400	..	111	125·0	4·3	1·10
3	0·380	212	0·220	171	0·340	224				
4	0·180	..	0·200	..	0·300	..				
5	0·380	..	0·160	..	0·400	..	94	125·0	4·6	1·25
6	0·380	..	0·220	..	0·400	..				
7	0·240	206	0·240	159	0·400	215				
8	0·400	..	0·300	..	0·400	..	99	137·5	3·4	0·50
9	0·400	..	0·260	..	0·400	..				
10	0·340	..	0·360	163	0·400	220				
11	0·180	..	0·180	..	0·340	..	101	190·0	4·0	0·85
12	0·400	..	0·340	..	0·400	..				
13	0·400	..	0·360	..	0·400	..				
14	0·340	204	0·220	163	0·400	218	92	210·0	2·7	0·50
15	0·400	..	0·360	..	0·400	..	Exposed to U-V for 5 min. at 24°.			
16	0·400	..	0·360	..	0·400	..	Exposed to U-V for 10 min. at 24°.			
17	0·360	205	0·380	165	0·400	223	118	290·0	3·4	0·55
18	0·380	..	0·360	..	0·280	..				
19	**0·325**	..	**0·238**	..	**0·359**					
20							32	165·0	3·2	0·75
21		206		176		229				
22							32	105·0	2·8	0·50
23	Mean		Mean		Mean					
24	daily	205	daily	165	daily	223	99	175·0	4·5	0·55
25	intake.		intake.		intake.					
26										
27							98	77·5	4·0	0·80
28										
29										
30							79	80·0	4·5	0·75
31		208		178		231				
Jan.										
1	0·200	..	0·240	..	0·240	..				
2	0·340	..	0·040	..	0·400	..	69	120·0	3·4	0·80
3	0·220	201	0·240	170	0·240	229				
4	0·340	..	0·240	..	0·360	..				
5	0·360	..	0·300	..	0·400	..	88	150·0	2·3	0·70
6	0·380	..	0·300	..	0·360	..				

No attempt has been made to reproduce the complete data for each group. In Group 2 (3 males) the mean dose of sulphanilamide was 0·278 g./rat/day administered for 36 days and the urinary porphyrin excretion attained a maximum of 260 γ. Similarly Group 3 (3 females) received on the average 0·079g./rat/day for 33 days and attained a maximum of 60 γ.

In a control group of 3 male rats the urinary porphyrin excretion averaged 35·2 γ with minimum and maximum figures of 20 γ and 45 γ respectively.

The full record will willingly be submitted to anyone sufficiently interested.

It may be pointed out that there was a very marked increase in the volume of urine passed, especially for the first few days, when sulphanilamide was added to the diet. The experimental animals declined somewhat in weight during the period, despite fairly well-maintained appetite, and this loss of weight may in part be accounted for by a dehydration of the tissues. At the close of the experiment, individuals from each group were killed by coal gas and their organs taken for histological examination.

ISOLATION AND IDENTIFICATION OF THE PORPHYRINS

Rat urine.—The acid extracts were accumulated until sufficient (about 250 c.cm.) had been obtained to make isolation of the porphyrin possible. The pigment was transferred to ether and then back to 25 per cent. hydrochloric acid. This solution was shaken several times with chloroform to remove any protoporphyrin or bile pigments. Finally, by means of potassium acetate, the porphyrin was taken back to ether. This red solution showed the absorption spectrum of coproporphyrin. It was evaporated, the residue esterified, taken into chloroform, thence to 5 per cent. hydrochloric acid, back to a small volume of ether, and this solution dried and evaporated. A crystalline residue consisting of fine needles in clusters was obtained. After washing with petroleum, it was treated with dry ether which dissolved all but a trace of pigment, too small to recrystallise for exact melting-point determination. The ether solution was allowed to evaporate and deposited crystal clusters in the typical habit of coproporphyrin III, M.P. 142°–144° F., remelt 166° F. Mixed with synthetic coproporphyrin III ester (M.P. 144°–146° F.), the gift of Prof. H. Fischer, it had M.P. 142°–146° F. The copper complex was also prepared and crystallised in fine red needles, M.P. 192° F. The identity of the porphyrin with coproporphyrin belonging to the isomeric series III (see discussion) is thus proved.

Human urine.—From the human urines, treated in a similar way, coproporphyrin III ester, M.P. 169°–171° F. was isolated,† and about an equal quantity of the ether-insoluble ester of coproporphyrin I. This was recrystallised five times from chloroform-methyl alcohol and finally had M.P. 241°–244° F.

The trace of porphyrin present normally in rats' urine—about 3γ per rat per day—is in all probability coproporphyrin I, as this is the isomer occurring in healthy human urine.

Rats' fæces are normally fairly rich in protoporphyrin. The increase which occurred in fæcal porphyrin excretion as the result of sulphanilamide dosing was shown to be due mainly to coproporphyrin III. The accumulated pigment was precipitated from acid solution by neutralisation to *p*H 3·7. The precipitate was dissolved in acetic acid and much ether added, after which the mixture was shaken repeatedly with water until acetic acid was removed. A small deposit forming at the liquid interface proved to be a porphyrin metal complex together with some brown material. Coproporphyrin was removed

† Coproporphyrin III methyl ester exhibits a double melting-point, 144°–146° F. and 172° F. The lower melting form, upon cooling and reheating, melts in the vicinity of the higher temperature.

from the ether by repeated shaking with 1 per cent. hydrochloric acid, and any protoporphyrin simultaneously carried over was eliminated by a vigorous shaking with chloroform. The pigment remaining in the acid was transferred to ether, the solvent evaporated, and the residue esterified. The ester solution was now put through the same scheme of separation as outlined above in the case of the urinary pigment, with the result that there was obtained coproporphyrin III ester, M.P. 140° F., together with coproporphyrin I ester, M.P. 238°–240° F.

For identification of the protoporphyrin, this fraction was removed from the ether by 5 per cent. hydrochloric acid, transferred back to ether and the solvent evaporated. The residue was now boiled for 4 minutes in a mixture of acetic acid and hydrogen iodide (7·5 to 1), to convert it into the corresponding mesoporphyrin, and excess of these reagents removed by diluting with much ether and washing the solution repeatedly with a mixture of sodium acetate and sodium sulphite, and finally with water. The porphyrin was now removed by 2 per cent. hydrochloric acid and this solution made just alkaline with sodium hydroxide. Separation of the sparingly soluble sodium salt of mesoporphyrin commenced at once, but the precipitate was only removed by centrifugation after some hours at ice temperature. The mother liquor was still deeply coloured and exhibited a strong porphyrin spectrum. Since it was considered possible that some series I pigment might be present, a very careful investigation of the supernatant was carried out, utilising the facts established by Fischer and his co-workers that the sodium salt of synthetic mesoporphyrin of series I is much more soluble than that of the series III isomer. All fractions obtained proved, however, to be similar when esterified and crystallised. The main sodium precipitate was treated with methyl-alcoholic hydrochloric acid, and the pigment ester purified by way of chloroform, 5 per cent. hydrochloric acid and ether. It separated in prismatic needles, M.P. 207°–210° F. Mixed with mesoporphyrin IX ester from Prof. H. Fischer (215°–216° F.) it had M.P. 207°–213° F. The protoporphyrin normally present in rats' fæces is thus a series III derivative possessing the same configuration as blood hæmatin.

An examination for the presence of uroporphyrins in the human clinical urines was made by means of chromatographic adsorption and also by ethyl acetate extraction, but minute traces only appeared to be present.

POST-MORTEM FINDINGS

The animals slaughtered were selected as follows :—

1.—Rat B of Group 1 (0·307 g. drug), killed whilst still receiving sulphanilamide. The group were excreting about six times the normal amount of porphyrin.

2.—Rat A of Group 1, killed 18 days after drug was discontinued.

3.—Rat B of Group 3 (0·079 g. drug), killed whilst still receiving sulphanilamide. The group were excreting about 2¼ times the normal amount of porphyrin.

4.—Rat A of Group 3, killed 18 days after drug was discontinued.

5. and 6.—Rats B and A of Group 2, killed 28 days after drug (0·278 g.) was discontinued and porphyrin excretion had returned nearly to normal. Sulphanilamide no longer present in the urine.

7, 8, and 9.—Controls of approximately the same age and weight, maintained on the same diet.

The findings were :—

1.—General appearance of carcass more brown than usual after CO poisoning. Neither met- nor sulph-hæmoglobin could be detected in the heart blood. Liver : rather small. Spleen : enlarged and blackish-brown in colour. Otherwise organs appear normal.

Histological examination.—Liver : poor in glycogen ; small amount of stainable iron ; some brownish pigment granules to be seen—e.g., in star cells. Otherwise normal. No excessive fat. Kidneys : a certain quantity of orange-brown pigment in the convoluted tubules. Otherwise normal. Spleen : intensely engorged ; sinuses very much enlarged, dilated with red cells. Large accumulation of greenish-brown pigment in the cells lining the pulp. The prussian-blue reaction showed a quantity of stainable iron. When viewed by ultra-violet fluoresence microscopy, an orange-red fluorescence was seen in those regions where the greatest accumulation of brown pigment occurred. Porphyrin is thus present in the spleen, which appears to be the organ most severely affected by the drug. Bone-marrow : appears normal. Possibly fewer immature cells than in the controls.

2.—The spleen still contained a quantity of stainable iron and accumulations of greenish-brown pigment. In the liver a small quantity of iron was present both in the form of granules and in diffusely staining masses. The quantity, though slight, was greater than in No. 1.

3.—The appearance of all organs resembled closely that of rat No. 1, the accumulation of stainable iron and brownish pigment in the spleen being only slightly less marked. The liver was poor in glycogen, but contained no abnormal quantity of fat. In the kidneys the same greenish-brown granules were seen in the cortex as were visible in rat No. 1.

4.—Rather less iron in the spleen than in No. 3 ; otherwise similar. In the liver more iron was again seen than was present in No. 3. Both diffuse masses and granules were visible.

5.—Only spleen and liver examined. Very considerable deposits of stainable iron in the spleen. Slightly more iron in the liver than in that of the controls.

6.—Only spleen and liver examined. Resembled No. 5 very closely in all respects.

7, 8, and 9.—No abnormalities present in any of the organs examined ; in particular, the spleens contained only traces of iron stainable by the prussian-blue reaction.

Discussion

It is clear from the feeding experiments on rats that sulphanilamide, in the dosage employed, causes a very marked porphyrinuria which persists for some time after the drug is discontinued. The porphyrins isolated were coproporphyrin III and a trace of coproporphyrin I from the urine, and the same two pigments from the fæces, but with a greater proportion of coproporphyrin I.

Fischer and his collaborators have shown that the pigments of blood and bile all belong to the set of isomers designated series III (theoretically derivable from ætio-porphyrin III), whereas in congenital porphyrinuria and certain other conditions such as sulphonal poisoning, pigments belonging to series I are excreted. The latter cannot be derived by breakdown of red blood-cells, but must arise owing to some derangement of hæmatopoietic processes in the bone-marrow (compare Rimington, 1936, 1938). Coproporphyrin III excretion has so far been found to be associated either with some impairment of hepatic function—for example, in cirrhosis of the liver (Dobriner, 1936), chronic alcoholism (Brugsch, 1937)—or with intoxication as by salvarsan (Schreus 1935) or lead (Grotepass 1932 ; Fischer and Duesberg 1932 ; Mertens 1937a ; Watson 1936). That sulphanilamide does occasion destruction of red cells seems certain, and it is suggested that any further work on this aspect of the drug's action should include a systematic study of the fæcal urobilin output.‡ That the increased porphyrin output is directly attributable to the disintegration upon normal lines of the released blood pigment

‡ In the course of the present investigation a few determinations of urinary urobilin were made, but values were found which were not strikingly abnormal. The acid ether extracts of the rats' fæces, however, contained at one time unusually large amounts of pigments which were definitely bilirubinoid in character and which imparted a brownish hue to this fraction and a purple-blue colour to the final acid shakings.

is not a readily acceptable hypothesis, since the balance of evidence goes to show that the change of hæmoglobin into bilirubin does not normally pass over a porphyrin stage (compare Rimington 1936). Moreover, the increased output of coproporphyrin I in the human urines demands some other origin for this isomer.

It is tempting to compare the situation with that in lead poisoning, where it has been postulated that the drug possibly acts by interfering with the mechanism of the incorporation of iron into protoporphyrin to produce hæmatin (Rimington 1938).

The series III pigments are less active as photosensitisers than are their series I analogues, and thus the rarity of severe photosensitisation in patients exhibiting a high grade sulphanilamide porphyrinuria becomes explicable. Still further, it is possible that the proportion of series I to series III pigments formed may vary in different individuals, according to the exact way in which the pigment metabolism of the body is affected. Such individual differences might conceivably bear some relation to the recorded idiosyncrasy displayed by certain individuals towards the drug—more especially as regards the manifestation of toxic symptoms and dermatitis. In this connexion it is of interest to recall that the symptoms exhibited by patients suffering from acute porphyrinuria—namely, nausea, colic, vomiting, constipation, muscular weakness, &c.—bear a certain resemblance to those encountered as a result of sulphanilamide toxicity.

During the present investigation an insufficient number of cases of dermatitis was available for a definite conclusion to be drawn with regard to its cause. In certain instances on record, exposure to sunlight would certainly seem to have played a major rôle in its development, and that photosensitising pigments are liberated in the organism as a result of sulphanilamide therapy has been amply proved by the present investigation. Nevertheless, the possibility cannot be excluded that a form of drug dermatitis may occasionally develop, which is not a result of photosensitisation in the usually accepted sense of the term.

The dosages employed in the experiments upon rats varied from approximately 0·4 g./kg. to 1·5 g./kg., figures higher than the generally accepted therapeutically effective mouse or rabbit dose—about 0·25 g./kg. to 1 g./kg.—but according to Dyke (1937) a 50 per cent. acute mortality in mice was only produced by 80 mg. of sulphanilamide, that is by 4 g./kg. In combating severe human infections it has not been uncommon to employ frequently repeated doses of 5 g. or more, and in one instance 90 g. of sulphanilamide was administered during the course of 7 days.

The quantity administered at any one time is, however, perhaps of less significance than the total quantity of the drug distributed in the organism, and in this connexion it is of interest that dermatitis has been reported to occur usually about the 8th or 9th day. Certain individuals may begin to show physiological intolerance at an earlier stage than others, and for this reason Colebrook and Purdie (1937) pointed out that a method by which hypersensitiveness to sulphanilamide could be detected at an early stage would prove of enormous value in clinical work. It is believed that the routine determination of urinary porphyrin may fulfil this requirement—at any rate the suggestion is made that it merits a careful trial and assessment in the light of clinical experience. That the drug is not wholly innocuous must be conceded, and as a result of the present investigation it would appear that it is capable of exerting an action, hitherto unsuspected, upon the pigment metabolism of the body.

Summary

The urines of hospital patients treated with sulphanilamide (*p*-aminobenzenesulphonamide) have been analysed for ether-soluble porphyrin content, and abnormally high values recorded in nearly every case.

Sulphanilamide has also been administered by addition to the artificial diet of normal healthy white rats in doses averaging 0·307 g., 0·278 g., and 0·079 g. per rat per day for periods up to 30 days. A marked increase in urinary and fæcal porphyrin excretion resulted in each instance, values as high as ten times the normal being recorded. The animals developed a polyuria during the first days after dosing was instituted and declined somewhat in weight. No other signs of toxicity were observed. The presence of a slight degree of photosensitivity was determined as the result of exposure to ultra-violet irradiation.

Isolation and chemical examination of the excreted porphyrins identified them as coproporphyrin III together with a trace of coproporphyrin I in the urine, and the same two pigments with a greater proportion of series I isomer in the fæces. The normally occurring protoporphyrin of rats' fæces has been identified as belonging to series III by conversion into the corresponding mesoporphyrin IX (M.P. 207°–210° F.). From the human clinical urine specimens, coproporphyrins I and III were isolated in approximately equal quantity. The significance of these findings is discussed and it is pointed out that the symptoms of acute porphyrinuria bear some resemblance to those reported as a result of sulphanilamide intoxication. The relative proportions of series I and III porphyrins may prove helpful in explaining individual idiosyncrasies towards the drug, especially as regards the manifestation of sulphanilamide rash or dermatitis. Quantitative determination of porphyrin excretion may possibly serve as a means of assessing hypersensitiveness towards sulphanilamide.

When dosage of the drug to rats is discontinued a slow return of the urinary porphyrin figure towards the normal level occurs, but this may take several weeks.

Animals killed at the height of sulphanilamide dosing exhibit only a slight degree of histological abnormality in the liver and kidneys, but the spleens are of a blackish-brown colour, much engorged, and show extensive deposits of a greenish-brown granular pigment, much stainable iron, and a certain amount of porphyrin (observed fluoroscopically). The histological picture had not returned to normal within 28 days after dosing of sulphanilamide was discontinued.

The available evidence would suggest that a certain degree of blood-cell destruction is caused by sulphanilamide in the doses employed, but it is felt that the disturbance in pigment metabolism is not to be explained by this fact alone. A more deep-seated effect upon the hæmopoietic system is suspected, analogous, possibly, in some ways to the toxic action of lead.

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SIGNIFICANCE OF FITS IN THE INSULIN THERAPY OF SCHIZOPHRENIA

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The insulin therapy of schizophrenia according to Sakel's (1935) technique consists in giving intramuscular injections of insulin in daily increasing quantities until a dose is reached which produces coma approximately three hours later. Coma is maintained for one to two hours and then terminated by administration of glucose. Unless remission is effected earlier, 50 or more comas are given as a course of the treatment.

Fits, usually preceded by twitchings and jerkings, are frequent complications; 25–77 per cent. of patients so affected have an average of four each, mainly in the first half of a course (Greenwood 1935, Parfitt 1937). They may occur at any time before or during or after the coma and call for immediate interruption of hypoglycæmia. Their ætiology is not yet satisfactorily explained. Sakel observed them more often in patients with little or no perspiration during hypoglycæmia—what he called "dry shocks"—and œdema of an irritable cortex has been suggested as a cause (Greenwood 1935, Ewald 1937). Incomplete carbohydrate metabolism, and therefore excess of pyruvic acid and methylglyoxal in the brain cells owing to deficiency or destruction of vitamin B_1, the necessary catalyst, has been demonstrated in animals (Peters 1936). It has been stated that the injection of this vitamin reduces considerably the incidence of fits in rabbits subjected to hypoglycæmia (Demole 1937). Clinical use of vitamin B_1 has been made by Freudenberg (1937) to overcome the excessive sensitivity of some patients towards insulin and to hasten the delayed return to consciousness after interruption of hypoglycæmia with glucose; but up to the present there is no clinical evidence that it inhibits fits in insulin therapy. Although these fits are clinically identical with ordinary major epileptic attacks, it has been thought that their cause is different, because epileptics have not been observed to be prone to have them in hypoglycæmia (Day and Niver 1937). Recent reports on two schizophrenics with histories of previous seizures, and an epileptic who had not had a fit for several months, show that they developed frequent fits in the pre-coma and post-coma periods of hypoglycæmia (Parfitt 1937). It is interesting to note that these patients have not had fits during coma.

ARE THE FITS BENEFICIAL?

Some psychiatrists incline to the view that fits have a good effect on schizophrenics treated with insulin, but the available evidence suggests that their cause as well as their therapeutic value may differ at the various periods of hypoglycæmia. Of the 22 patients treated at the Three Counties Hospital 6 had fits, as follows:—

Case 10, Table A, a paranoid of four years' psychosis, had 11 fits, approximately two hours before the coma was expected. On the days that 1 grain of phenobarbitone was given he had no fit and coma proceeded quietly. There was no previous history

TABLE A

Case.	Age.	Diagnosis.	Duration of psychosis.	No. of comas.	No. of fits due to hypoglycæmia.	Results.
1	26	Katatonic excitement.	½ year.	22	—	Complete remission.
2	22		„	20	—	
3	23	Katatonic depression.	„	34	1	
4	21	Dementia paranoides.	„	26	2	
5	30	Katatonic depression.	1 „	36	3	
6	28		„	21	3	
7	34	Katatonic excitement.	„	16	4	
8	36	Katatonic depression.	1½ years.	38	—	Unimproved.
9	22	Dementia paranoides.	3 „	79	—	
10	24		4 „	68	11	
11	23	Hebephrenia.	4 „	75	—	
12	36	Dementia paranoides.	Over 5 years.	74	—	

TABLE B

Case.	Age.	Diagnosis.	Duration of psychosis.	No. of cardiazol fits induced in hypoglycæmia.	Results.
1	26	Katatonic depression.	½ year.	6, dose 0·3 g.	Complete remission.
2	25	Dementia paranoides.	1½ years.	4, „ 0·4 g.	
3	23	Katatonic depression.	1½ „	8, „ 0·5 g.	Unimproved.
4	21	Katatonic excitement.	2 „	4, „ 0·4 g.	Complete remission.
5	19	Hebephrenia.	2 „	6, „ 0·4 g.	Partial remission.
6	27	Katatonic depression.	2½ „	8, „ 0·4 g.	Unimproved.
7	27	Katatonic stupor.	3 „	8, „ 0·4 g.	
8	38	Paraphrenia.	Over 5 years.	6, „ 0·5 g.	
9	28	Katatonic stupor.		8, „ 0·4 g.	
10	29			8, „ 0·4 g.	

of any fits and he had none during the seven months following the completion of the treatment. He remained unimproved.

Five cases (Nos. 3, 4, 5, 6, and 7, Table A) had from one to four fits in coma, a few minutes to an hour and a half after its onset. Their occurrence appeared to be entirely accidental and unrelated to any variations in the coma dose attempted, with a degree of safety. All the patients have shown improvement after each fit, often smiling in a friendly way on regaining consciousness and remaining emotionally balanced and better behaved later. They were all comparatively recent cases, their symptoms (especially hallucinations) disappeared easily and eventually they acquired full insight into their condition before they had the usual minimum number of comas.

No fits after coma were observed in any of the 22 patients treated. Three cases (Nos. 1, 2, 8, Table A) of the remaining 16 which had no fits recovered, but the rest showed no appreciable improvement even with an extended course of over 50 comas. Georgi (1937) advocates in such cases a combination of Meduna's (1937) Cardiazol with Sakel's insulin treatment. He reports that a smaller dose of cardiazol is required to produce a fit in hypoglycæmia and it should be given in the second hour after the injection of the coma dose of insulin, when, according to him, fits in hypoglycæmia are more likely to occur. His technique, somewhat modified, has been applied to 10 of the unimproved patients whose bodily condition was very good. Insulin comas were continued and cardiazol fits have been induced twice a week in the third hour, approximately 15–20 minutes after the onset of the coma, when pulse and respiration were satisfactory. Cardiazol fits were omitted on days when premature incidence of coma was observed, which tended to deepen rapidly, or when respiration was distressed and pulse weak and rapid. Hypoglycæmia was interrupted immediately after the fit by intravenous glucose. There were no accidents and the return to consciousness proceeded as usual. The results are shown in Table B. Of the 10 cases so treated 4 have so far had satisfactory remissions.

All the results were assessed according to Muller's (1936) suggestions and the recommendations of James, Freudenberg, and Cannon (1937), which have been accepted by the Association of insulin therapeutists in this country.

CONCLUSION

It is obvious that the duration of psychosis is the most important factor in the prognosis, but although the number of cases reported in this paper is too small for definite conclusions, I consider that the occurrence of convulsions during the actual coma period of insulin therapy is likely to enhance the value of the treatment, whether these fits occur spontaneously in coma or are induced by injections of cardiazol.

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ENTERIC FEVER
TREATED WITH SUPRARENAL CORTEX EXTRACT AND VITAMIN C INTRAVENOUSLY

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Emile Sergent (1898–1920) drew attention to suprarenal deficiency in infections and to resemblances between typhoid fever and Addison's disease, and reported encouraging results from treating typhoid with suprarenal extract. My own interest in this subject was first aroused by a paper by Alfred Khoury (1912) on typhoid vomiting of suprarenal origin, and I found that in typhoid, as in Addison's disease, the urea and the non-protein nitrogen of the blood were raised and the plasma, chlorides, sugar, cholesterol, and bilirubin were decreased. The low values of bilirubin in typhoid, when high values would be expected because of the enlargement of the liver and spleen and the toxic typhoidal state, are due, I believe, to a defensive mechanism (Najib-Farah 1938). Intravenous injections of adrenaline (0·1 to 0·25 c.cm. every day or two days), though they often gave the patient relief, occasionally caused disagreeable reactions and did not shorten the illness. The work of Hartmann (1932) on the adrenal cortex "general tissue hormone," and of Szent-Györgyi (1931), Schroeder (1935), and Hochwald (1935) on vitamin C led me in December, 1935, to try suprarenal cortex hormone combined with massive doses of the vitamin by intravenous route. Subcutaneous or intramuscular administration appears to be less or not at all active. The cortical hormone was Eschatin, prepared by Parke, Davis and Co., which is free from protein and contains only a negligible trace of adrenaline. The vitamin C was Cébion, Merck.

As soon as the diagnosis is established I begin intravenous injections of suprarenal cortex extract, in doses between 5 and 20 c.cm., according to the age and state of the patient, with 500–1000 mg. of vitamin C. The usual daily dose of the cortical hormone injected at a time is 10 c.cm. The two products are mixed in the same syringe, since they seem to be more active when injected together. During the same day two more doses of 500 mg. vitamin C are injected at four-hourly intervals; no oral medication is given but an ice-bag is applied to the abdomen and occasionally to the head until the temperature falls. Administration of suprarenal cortex extract and vitamin C is continued for 5–12 days, and is followed by two intravenous injections daily of 500 mg. of vitamin C alone, for at least seven days.

In 15 cases of enteric fever confirmed by the laboratory (7 typhoid, 3 paratyphoid A, 5 paratyphoid B), and 3 cases of acute *B. coli* infection which were treated in this way, the results were with one exception immediately favourable, the exception being a desperate case of typhoid in which this treatment was given as a last resort. The effect is dramatic from the first injection. The injections produce no pain, shock, or reaction. There is abundant urination and a gradual fall of temperature to normal between the third and seventh day. Symptoms disappear rapidly, except perhaps the cough, which may need an expectorant, and the patient is soon able to take the nourishment which he refused or could not keep

down. In one case vomiting persisted after the fall of temperature, but was stopped by subcutaneous glucose saline, and in two toxic cases (one of typhoid and one of acute *B. coli* infection) glucose-saline had to be given to maintain the sodium equilibrium and avoid dehydration.

CASE RECORDS

The following six cases illustrate the method and results.

CASE 1.—A boy aged 15, a painter, first seen on Dec. 7th, 1935, in the third week of his illness. Temperature 105° F., pulse small and rapid, 135. Tongue very dry. He was prostrated, delirious at times, and complained of severe pain in the lumbar and epigastric regions. He was vomiting a greenish watery liquid and refused all nourishment. There was meteorism with tenderness all over the abdomen, particularly over the cæcum, and an enlarged spleen and liver. He was having three yellow fœtid motions a day. Urine scanty with a trace of albumin and hyaline casts. Blood culture negative. Leucocytes 4300. Widal reaction positive for *B. typhosus*, 1 in 300. Blood chemistry: non-protein nitrogen, 0·055 g. per 100 c.cm.; urea, 0·045 per cent.; chlorides, 0·4 per cent.; sugar, 0·085 per cent.; cholesterol, 0·125 per cent.; bilirubin, 0·3 unit van den Bergh.

On Dec. 10th, when his morning temperature was 105·4° F., he received 10 c.cm. of suprarenal cortex extract, with 500 mg. of vitamin C, intravenously morning and evening. Between these injections he had three of 500 mg. of vitamin C. At 8 P.M., before the second hormone injection, his temperature was 102·2° F. and he was quieter. During the night he had abundant urination, and next morning his temperature was 101·8° F. The vomiting stopped, he answered questions more easily, and his tongue was moister. On the third day his morning temperature was 100° F., and his pulse-rate 92; there was no flatulence; his spleen and liver were scarcely palpable; diuresis was abundant; he was drinking much, asked for food, and was cheerful and lively. That day he had one injection of hormone and vitamin C, and two of vitamin C alone. On the fourth day his morning temperature was 98·2° F., his pulse-rate was 78, and he received me sitting up in bed. He had the same injections as the day before. On the fifth day, to my great amazement, his father brought him to my office to have his injection, so as not to disturb me. He said he was cured, and had to go to work the next day. After I had given him some pennies he agreed to be quiet for two more days. On the seventh day he refused any more injections as he felt quite well. This attitude did not surprise me for natives of his category do not seek treatment unless they are really in need of it.

CASE 2.—The son of a mason aged 11 years. He had been ill for about four weeks, but confined to bed for five days only. He had characteristic symptoms of typhoid of moderate severity. His temperature on July 9th, 1936, at 7 P.M. was 103·6° F.; his pulse-rate 120. Blood cultures negative, leucocytes 5700; Widal positive for paratyphoid A, 1 in 150. Blood chemistry: non-protein nitrogen, 0·40 per cent.; urea, 0·038 per cent.; chlorides, 0·5 per cent.; sugar, 0·097 per cent.; cholesterol, 0·125 per cent.; bilirubin, 0·4 unit van den Bergh. He was given 5 c.cm. of suprarenal cortex hormone with 500 mg. of vitamin C once a day and two injections daily of 500 mg. of vitamin C alone for 8 days. From the first injection the temperature began to fall and it was normal by the fifth day. Urination was again abundant. The patient lost his symptoms with striking rapidity. For seven days more he had 500 mg. of vitamin C, morning and evening. Convalescence was uneventful.

CASE 3.—In September, 1937, my wife had typhoid fever. She had hyperpyrexia and a rapid small pulse with circulatory depression; she was semi-conscious and delirious, with vomiting, cough, profound asthenia, acute lumbar and epigastric pains, and cramps in the extremities. There was flatulence and moderate diarrhœa. The spleen and liver were enlarged. Urine scanty with a trace of albumin. Leucocytes 5200 with lymphocytic predominance. Blood culture positive for *B. typhosus* and *paratyphosus* B. Blood chemistry: non-protein nitrogen, 0·07 per cent.; urea, 0·065 per cent.; chlorides, 0·38 per cent.; sugar, 0·078 per cent.; cholesterol, 0·11 per cent.; bilirubin, 0·4 unit van den Bergh. Treatment was begun on the ninth day when her morning temperature was 105° F. She had 10 c.cm. of suprarenal cortex extract with 500 mg. of vitamin C and two injections of 500 mg. of vitamin C daily for ten days followed by vitamin C alone for a further ten days. The typhoid symptoms regressed rapidly. The temperature fell to normal by the fifteenth day of her illness.

CASE 4.—A girl, aged 20, whom, in October, 1937, I saw in consultation, suffering from a relapse of typhoid. She was in her third month of illness with a high temperature. Her condition was very serious and she still had a positive blood culture. She had signs of damage to her right kidney and gall-bladder and a suspected myocardial involvement. After some opposition I gave 10 c.cm. of suprarenal cortex extract with 500 mg. of vitamin C once a day, and two injections daily of 500 mg. each of vitamin C. The effect was dramatic from the first injection, and on the fourth day the temperature fell to normal with abundant urination and regression of almost all the typhoid phenomena. Her rapid recovery caused a considerable sensation in Alexandria.

CASE 5.—An Italian electrician, aged 21, with typhoid. I saw him in consultation when he was in a desperate condition, unconscious, delirious, with an irregular and at times imperceptible pulse of 160, twenty or more fœtid motions a day, and intestinal hæmorrhage. The first injection of 10 c.cm. of the hormone with vitamin C seemed to relieve him. He had three injections only, for the supply of eschatin gave out, and he died three days after the last injection.

CASE 6.—A very obese woman of 70, who had had thirteen children. She had a staghorn calculus in the pelvis of her right kidney with occasional attacks of pyelonephritis accompanied by pyrexia. The urine, loaded with pus, contained colon bacilli. She always refused to hear of surgical intervention. After eight days of pyrexia ranging between 98·6° F. and 100·4° F., she had a severe rigor and her temperature rose to 104° F., with a very rapid and irregular pulse and vomiting. There was pronounced flatulence and her abdomen was tender everywhere. She was exceedingly prostrated and for the next three days vomited continually, with severe epigastric and lumbar pains and headache, several rigors a day with hyperpyrexia and profuse perspiration. The right kidney was enormous, with pain and tenderness in both loins, particularly the right. She also had oliguria, passing 300–400 c.cm. of urine in 24 hours, with albumin, pus, blood, and epithelial and granular casts. Blood chemistry between Oct. 13th and 17th: non-protein nitrogen, 0·072–0·095 per cent.; urea, 0·08–0·12 per cent.; chlorides, 0·25–0·35 per cent.; sugar, 0·07–0·085 per cent.; cholesterol 0·100–0·115 per cent.; bilirubin, 0·4–0·5 unit van den Bergh.

On the fourth day after her first rigor when she was semi-comatose she was given 10 c.cm. of suprarenal cortex extract with 1000 mg. of vitamin C intravenously followed by two injections of 500 mg. of vitamin C. This treatment was continued for eight days and was followed by two injections daily of 500 mg. vitamin C for ten days. A spectacular result was obtained from the first day, and within three days the patient had no more rigors and the temperature fell to normal. There was abundance of urine with great discharge of pus, but she continued to vomit, until she was given hypodermic glucose-saline. The affected kidney gradually grew smaller and the patient made an excellent recovery. Her urine is now clearer than it has been for years, though it still contains 0·015 per cent. of albumin and pus.

DISCUSSION

Experimental and pathological observations prove that the endocrine system, particularly the adrenals, has a defensive rôle in infection. For example, Calderera (1935), using suspensions of staphylococci and *B. coli*, found that the bactericidal power of the blood of rabbits was constantly increased by supra-

renal cortex extract. On the other hand, Herbrand (1935) found the combined use of suprarenal cortex extract and vitamin C efficacious in protecting guinea-pigs from diphtheria toxin, while Jusatz (1936) demonstrated that the bactericidal index and antibody formation were raised by intravenous administration of vitamin C. In typhoid the combined use of suprarenal cortex extract and vitamin C intravenously, in the way suggested, appear to affect favourably, not only the deficient adrenals in particular, but also the whole system, as was demonstrated by the rapid recovery of the cases so treated. How these changes take place remains a mystery.

SUMMARY

Fifteen cases of enteric fever (7 typhoid, 8 paratyphoid) have been treated by intravenous injections of suprarenal cortex extract and vitamin C. In all but one case immediate improvement followed without untoward reactions.

In three cases of acute *B. coli* infection a similar good response was obtained.

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Alexandria, Egypt.

Clinical and Laboratory Notes

HEMIPLEGIA IN DIPHTHERIA

BY PHILIP SCIENCE, M.D. Leeds

LATE RESIDENT MEDICAL OFFICER AT THE CITY INFECTIOUS DISEASES HOSPITAL, HULL

IT is now generally accepted that the hemiplegia complicating diphtheria may be of embolic or thrombotic origin.

Kennedy (1937) in his interesting case report says that cerebral embolism is, according to authoritative opinion, secondary to endocarditis. It is doubtful whether there is ever endocarditis in diphtheria, and the following case is described as showing a more likely cause of the embolism.

On Nov. 12th, 1936, a boy aged 10½ was admitted with diphtheria to the Hull City Hospital, Cottingham, on the fifth day of disease. There was necrotic membrane on the posterior pharyngeal wall covering both tonsils and extending beyond the pillars of the fauces on to the uvula and soft palate, with gross cervical adenitis and peri-adenitis producing the appearance of typical bull-neck. The child was already suffering from grave toxæmia and crops of petechiæ of less than 0·5 mm. diameter were apparent in the right axilla, over both clavicles and the sides of the neck. A dose of 20,000 units of diphtheria antitoxin was given intramuscularly, followed half an hour later by 20,000 units intravenously.

Heart.—During the following week there was progressive deterioration of the myocardium. The quality of the first sound in the mitral area became gradually weaker until its enfeebled sound presented striking contrast to the loud second sound in the mitral area. There was also some slight associated interference with the bundle of His as evidenced by a gradual slowing of the cardiac rate to 65 on the 13th day of disease and its slow return to 100 five days later. On the 17th day there was appreciable reduplication of the second sound in the mitral area, which persisted for three days. By the 30th day the apex-beat was ¼ in. outside the nipple line with 8 extrasystoles per 100 pulse-beats, and it was not until after the 7th week that the heart returned to its normal size and became completely regular, with much improved tone in the quality of the first mitral sound.

Proteinuria was present from the 6th to the 41st day of the disease.

Nervous system.—Palatal paresis became evident on the 11th day and pharyngeal paresis on the 38th day. On the 22nd day there was right facial weakness with inability to contract the right occipito-frontalis and orbicularis palpebrarum muscles, due presumably to a nuclear or infranuclear lesion of the right seventh cranial nerve. The knee- and ankle-jerks were also absent at this stage. There was also slight ptosis of the right eyelid, but the other extrinsic and intrinsic ocular muscles were normal. On the 24th day simultaneous weakness of the left side of the face, the left arm, and left leg was first noticed with extensor plantar response on that side. The clinical picture was that of a left hemiplegia, associated with a peripheral neuritis of purely motor type. At this stage the apex-beat was still ¼ in. outside the nipple line, with enfeebled mitral first sound and 5–8 extrasystoles per 100 pulse-beats. Slight spontaneous movements of the left leg were first noticed 8 weeks after the onset and thereafter the patient continued to make normal satisfactory progress.

Result.—He was discharged 6 months after the onset, having been up and about for 2 months. The facial weakness of both sides had completely recovered. He walked steadily without aid but swung his left leg. There was still some residual loss of motor power in the left arm and leg with appreciable spasticity and extensor plantar response on that side. The reflexes on the left side were now exaggerated. There were no deformities. A blood sedimentation-rate taken before discharge was 8 mm. at the end of an hour.

The case is interesting in that the hemiplegia was on the left side, whereas in the majority of previous reports it has been on the right. Moreover, the hemiplegia in this patient was maximal from the onset, suggesting an embolic phenomenon. It occurred at a stage of the disease when the heart was dilated and exhibited extrasystoles. Did the enfeebled heart's action together with a dilated myocardium permit the formation of a thrombus, and was this thrombus, with the onset of extrasystoles, released into the systemic circulation to form an embolus in the lenticular-striate branch of the right middle cerebral artery?

I am grateful to Dr. H. Mason-Leete for his permission to publish this case.

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OVERCOMING RESISTANCE IN ABDOMINAL PALPATION

BY N. J. NICHOLSON, M.B., F.R.C.S. Edin.

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EVERYONE is aware of the value of rigidity of the abdominal muscles as a diagnostic sign in peritoneal irritation. Beginners sometimes have difficulty in distinguishing between voluntary and true reflex rigidity. Many factors may operate to cause a patient under examination voluntarily to contract the muscles of the abdominal wall. It is often difficult to make the patient understand that he is required to relax. In many cases the request to do so draws his attention to the abdominal wall and has a result opposite to that desired. Much can be done by

speaking to the patient about something unconnected with his illness, such as his work or family, and by asking him to breathe through his mouth. It is better for the hands to be by the sides and not behind the head. Patients think they are being helpful if they retract the abdominal wall, by bringing it closer to the vertebral column—again in contrast to

Method of palpation. The right hand restricts thoracic respiration, compelling the abdominal muscles to relax during inspiration.

the effect desired. There are many other factors that make the muscles stiff, such as nervousness, fear or modesty, cold draughts, examiner's hands cold, fear of passing flatus. Malingerers may contract their abdominal muscles voluntarily; sustained pressure will tire out the resistance and the malingerer will snatch the wrists of the examiner and protest pain.

Much is made in text-books and clinics of telling the patient to flex his hips, which is supposed to relax the abdominal muscles. If the legs are made comfortable over a pillow the plan may be successful. But too often one sees the pillow omitted, and the hips are flexed partly by the muscles attached to the pelvis. For these muscles to act the pelvis must be steadied by antagonists, notably the rectus abdominis. In other words the abdomen is stiffened and the effect again opposite to what is desired.

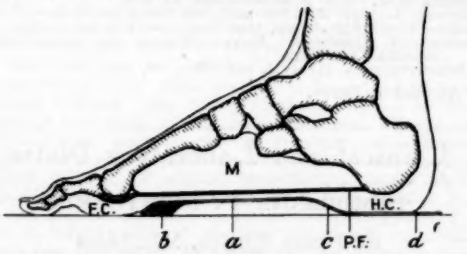
I have found a simple manœuvre useful in overcoming this resistance. When the abdominal wall is stiffened and retracted respiration becomes of the thoracic type. To counteract this the palm of one hand is rested with a fair amount of weight on the patient's sternum. This militates against thoracic respiration and encourages the patient to breathe abdominally. As soon as he does this the anterior abdominal muscles relax on inspiration and an opinion may then be formed whether the rigidity of the abdominal muscles is genuine or assumed. It is necessary for the examiner to be at some height above the patient. The height of the ordinary bed is satisfactory but the procedure is difficult if the patient is on a high trolley. The Figure (for which I am indebted to Mr. A. E. C. Todd, radiographer to the Birkenhead Municipal Hospital) may serve to illustrate the method of examination.

A NEW TYPE OF FLAT-FOOT SUPPORT

By Walter Wisbrun, M.D.
Düsseldorf, Germany

In the first stage of flat-foot, in which only a certain lengthening of the musculature has taken place, massage, gymnastics, and walking bare-footed on grassy or sandy soil are the most useful remedies. At a more advanced stage, however, when there has been a pathological alteration of the musculature, ligaments, and even bones, this treatment is no longer sufficient and further exercise may even result in further strain. Correction can then be applied only by relieving the excessive strain or by providing additional support. The old method of supplying this support consisted in the use of a plantar arch. The pressure exerted by such an apparatus is essentially at its apex and it is usually designed to exert the maximum pressure medially and to invert the foot. Not only is this inversion of no use, but the localised pressure tends to compress the all-important medial musculature of the sole of the foot.

The correct direction of support should be diametrically opposed to that of the strain—that is to say, vertically upwards. Further, the tendency to local pressure at one point, with subsequent compression and atrophy, can only be avoided by using a support modelled to the shape of the sole and this shape, as is well known, differs considerably from that of the bony arch. It will be evident from the Figure that the soft tissues of the foot, which have tended to be ignored in the past, take up considerable space. An adequate support should be adapted to both fat cushions and to the middle portion of the plantar fascia. The support illustrated is modelled to the foot and kept in position by a flat rear end (*d*), which fits into the heel of the shoe. This appliance, by means of its large supporting plane, helps to restore the pulling and pushing powers



Longitudinal section through the third toe to show the support in place. M = Plantar musculature. P.F. = Plantar fascia. H.C. = Heel cushion. F.C. = Forefoot cushion. *abcd* = support.

inherent in the different parts of the soft tissues. It is a foot brace rather than a foot support. There is no adaptation to the inner hollow of the foot, for this would cause compression of the medial portion of the plantar musculature and inversion of the foot, when eversion is needed. The raised plane of the foot brace should stop as a bar (*b*) corresponding to the straight posterior border of the metatarsal fat cushion.

I have used such a brace in a large series of cases and its efficacy can easily be demonstrated by radiography. The usual metal support is heavy, corrodes easily, and tends to damage the shoe and sock, while the brace consists of a spring made of shaped layers of ply wood, covered with leather. It is as durable as metal but much lighter and no more bulky and is easy to adapt to individual requirements.

The support is manufactured by Perpede's of Stuttgart and is obtainable from Woodway Foot Appliances Ltd., 126, Uxbridge-road, London, W.12.

International Union against Tuberculosis.—The Italian Fascist National Federation against Tuberculosis has placed at the disposal of the Union six scholarships, each of 2000 liras with board and lodging, at the Carlo Forlanini Institute in Rome. The scholarships will preferably be awarded to young doctors already familiar with tuberculosis problems. Applications should reach the secretariat of the Union, 66, Boulevard, St.-Michel, Paris, by July 1st.

MEDICAL SOCIETIES

MEDICAL SOCIETY OF LONDON

AT a meeting of this society held on March 28th, with Mr. J. E. H. ROBERTS, the president, in the chair, a discussion on the diagnosis and treatment of

Lung Abscess

was opened by Dr. JAMES MAXWELL. He explained some of the grave fallacies which vitiated animal experimentation, and said that lung abscess could be produced by aspiration of infected material, or by the carriage of organisms to the lung in the blood stream. Blood entered the bronchial tree during most operations for tonsillectomy, and there was therefore every reason why the patient should develop a lung abscess. Few patients, however, did so, and the reason was probably that abscess formation depended upon the abolition of the cough reflex. Pneumonitis was an inflammatory consolidation of any kind, and the fate of the patient rested not only on the local but also on the general resistance. Good local and general resistance might allow a simple inflammation which would soon resolve. Good general and bad local resistance would bring about suppuration, cavity formation, and lung abscess. Good local and bad general resistance would lead to acute toxæmia which, with consolidation of the lung, was lobar pneumonia. If both forms of resistance were weak, acute septicæmia would develop. The virulence of the organism was, of course, a major factor. He was coming to look on pneumonitis as the precursor of most inflammatory lung troubles. Any condition which caused infection of the lung would cause lung abscess if the resistance of the lung tissue did not suffice to overcome the infection. Among the causes of lung abscess were lesions which concerned the respiratory tract—e.g., infection after tonsillectomy; foreign body in a bronchus; carcinoma; and pneumonia when the patient began to overcome the general toxæmia but the local resistance broke down. Lung abscess might follow chest injury or abdominal operation, especially a septic one: presumably the portal circulation became infected from a suppurative focus in the liver. When abscess followed pyæmia there was no doubt about the embolic nature of the condition. Dr. Maxwell considered that the so-called primary lung abscess was a pneumonitis in which the local resistance was breaking down.

The symptoms largely depended on the situation of the abscess. Cough was a fairly common early symptom and might result from irritation of the bronchi and therefore be unproductive. There was often surrounding congestion at this stage, and therefore hæmoptysis. Sputum might appear suddenly and in considerable quantity, signalising the rupture of the abscess into the bronchus. Pain in the chest was valuable, for it helped to localise the abscess and to show that it was near the pleura. Shortness of breath was not a prominent symptom. The general symptoms were toxic in origin; the temperature varied greatly and not necessarily with the size of the abscess. There might, not very commonly, be anorexia or vomiting. Almost diagnostic, especially in an acute case, was cough induced by a change of position and due to emptying of a cavity. The physical signs depended entirely on the situation. If the abscess were near the hilum, surrounded by a large volume of lung, there might be no signs, but if it were situated immediately under the pleura the signs might be obvious. A physical examination of the chest had therefore comparatively little value. Of the general signs, clubbing of the fingers was perhaps common, and in chronic cases there might be hypertrophic pulmonary osteo-arthropathy, or even amyloid disease. Radiological examination, especially by tomography, was very important, and the most important sign was a small fluid level in a clear area. Bronchoscopy would not only make diagnosis more certain but would assist materially in treatment. The rules for treatment were identical with those governing the treatment of an abscess anywhere else: to aid maturation and evacuation by simple means. If this would not take place, some form of surgical attack might be necessary, such as bronchoscopic aspiration or external drainage. Elevation of the feet was only of value for an abscess in certain portions of the lower lobe. Postural treatment produced rapid healing in many cases, but should not be persisted in too long if success did not come. If the view were accepted that all lung abscesses were peripheral, in relation to the pleural portion of the lobe, then artificial pneumothorax was inappropriate, except possibly for an abscess presenting into the interlobar fissure.

Mr. R. C. BROCK declared that most cases of lung abscess were primary. There was often no obvious predisposing cause, and he was not convinced of any common association between true specific pneumonia and lung abscess. The term "pneumonitis" explained the preliminary pathology. He was impressed by the frequency of gross oral—particularly dental—and nasal sepsis. The ease with which oily substances could be introduced into the nose and thence into the alveoli might be a clue to the connexion. The most important factor in the ætiology was that to which Neuhoff had called attention—the position of the abscess in relation to the bronchial tree and the pleura. He emphasised that all lung abscesses were peripheral and that the abscess resulted from blockage of the bronchus by necrotic or infected material. A cone-shaped or cuboidal area of lung distal to the blocked bronchus became infected and broke down. The old division into central and peripheral types was not valid. The first error had come from the radiologist. Most abscesses seemed to be near the hilum, but if a lateral view were taken the abscess very often appeared to be at the periphery. It was impossible to study the lungs properly without a lateral view. By far the largest number of abscesses presented in relation to the costal surface. The abscess presenting in relation to the interlobar fissure was the only type which could be mistaken for a true central abscess.

Mr. Brock dealt in detail with the anatomy of the bronchi, the importance of which in diagnosis and treatment he emphasised, and stated that for successful postural treatment it was essential to know the true direction of bronchial drainage. Bronchoscopic aspiration was valuable but not magical, as some seemed to think. As soon as postural treatment failed to produce progressive improvement, aspiration was the next step, but he had been impressed by the infrequency with which granulation tissue could be found and removed and the affected bronchus dilated. Generally speaking, any benefit would be immediate, and use of the bronchoscope should not be continued. The surgeon was concerned either with the spontaneous evacuation of the abscess by simple means,

or with the use of external drainage if that failed. The time for external drainage was when the clinical and radiological information showed that progress was not being made.

Dr. F. G. CHANDLER spoke of the comparative frequency of spontaneous healing. Inhalations, especially of menthol steam, were useful. Arsenic by the mouth had the greatest value, and so had sodium benzoate and novarsenobenzol intravenously. Sulphanilamide might be effective in certain cases. There existed a form of suppurative pneumonitis in which there was no cavity or fluid level, and a large area of lung was necrotic. Perhaps lobectomy or even total pneumonectomy was the method of choice, but these were severe measures. He asked how he should treat diffuse lung abscess without a definite boundary.

Mr. A. TUDOR EDWARDS said he had never seen a true pneumococcal abscess follow a true lobar pneumonia. He thought that most lung abscesses were caused by the inhalation of infective material. Oil would run freely into the bronchial tree, and so the larynx did not form an impregnable defence. Needling a lung through a normal chest wall was absolutely unjustifiable, and even when the lung was exposed needling had great dangers. He made a deliberate incision through the pleura with a knife, and would rather do so even if the pleura were adherent than pass a needle through a free pleura. If the pleura were free he would suture the wound, insert an intercostal tube into the lobe, and aspirate all the air. The abscess could be localised with great accuracy by this method. At least ten days should be allowed between the two stages of operation. Suppurative pneumonitis was not quite a pulmonary abscess, but a diffuse condition with multiple abscesses. The only effective method of treating it was by coagulation and excision with a diathermy loop.

Dr. P. H. MANSON-BAHR reminded the meeting of the possibility that a lung abscess might be caused by amœba and therefore at once curable with emetine. He mentioned one case in a woman of 73, whose only contact with the tropics had been ten days in Calcutta as a bride of 20.

The PRESIDENT spoke of the danger of being too optimistic and of keeping patients waiting for spontaneous cure so long that the inflammatory process produced irreparable change in the lobe, with chronic invalidism. Neuhoff had published a series of cases in which early operation had been successful in a very high proportion. Operative drainage in an early stage was not very dangerous, and should be undertaken when postural treatment did not produce drainage. The best evidence of failure to drain was the persistence of a fluid level for a fortnight. If a tomogram showed that the bronchus leaving the abscess was in the apex of the cavity, postural drainage was likely to be of value.

Dr. W. BURTON WOOD said that the physician must devise better means of dealing with diffuse pulmonary suppuration. The introduction of Prontosil and allied remedies opened up a new field of therapy.

Dr. J. G. SCADDING confirmed that suppurations occurred after lobar pneumonia. All writers on the subject had described ring shadows indicating cavities. He had seen many cases without symptoms of pulmonary abscess clear up without particular treatment. It might form a link in a long series of conditions of which the extreme form was a frankly putrid abscess, and explain some of the discrepancies in the response of various patients to treatment.

Dr. E. R. BOLAND recalled a case in which a young man had begun to recover after a severe fit of coughing, in which he had evacuated much pus, brought on by the severe tilting of his stretcher on the way up a steep flight of stairs to an operating theatre.

Dr. MAXWELL said in reply that he had encountered a case of amœbic lung abscess in a patient who had never been out of the country nor had dysentery. Diffuse suppuration sometimes responded extraordinarily well to ultra-short wave diathermy. Where the suppuration did not resolve completely, a definite abscess might be formed which could be treated in the ordinary way.

Mr. BROCK, also in reply, stated that one problem of diffuse suppuration was the possibility of overlooking a large cavity within the "black-out." The possibility of saving the patient's life might justify the use of the needle in such a case. Lung abscesses often came to treatment too late—perhaps because of mistrust of external drainage.

SOCIETY OF RADIOTHERAPISTS
OF GREAT BRITAIN AND IRELAND

AT a meeting of this society held on March 18th, with Dr. N. S. FINZI in the chair, Dr. RALSTON PATERSON opened a discussion on Methods of

Prescribing and Measuring Dosage in Radiation Therapy

He said that the great need of present-day therapy is so to build up the conception of dosage measurement that information can be accumulated about the actual lethal dose to each particular type of tumour and the tolerance of skin and other normal tissues to similar measured doses. If a system can be used for general statements of doses, quite detached from technique, wave-length, or field size, it is of real value. Dosage must be assessed in terms of quantity, which is measured in röntgens because this measure has gained international acceptance, and the only valid statement of clinical dosage is röntgens in tissue. In the treatment of malignant disease two tissues need practical consideration—the tumour and the skin. The dosage system must allow the determination of the dose actually received at every point in the tumour, usually as a statement of the maximum and minimum doses, while computation of the dose to the skin should also be given in terms of the maximum dose received at any point in the area.

In clinical work a statement of quantity alone was inadequate. The duration of exposure had a profound influence on the effect produced and in Dr. Paterson's view dosage should always be given in relation to time. Although there were physical problems still unsolved, enough accurate information was available about energy absorbed to make it possible to measure in röntgens not only X rays but also gamma rays, but the methods differed. For X radiation the dose could be measured either directly or indirectly—Dr. Paterson on the whole preferred the indirect method. The dose at the surface of the body for the particular applicator or radiation field to be used was determined and the tumour dose was arrived at in terms of percentage depth dose, or for crossed field techniques as the sum of all the contributions received from the various fields. Radium dosage assessment was at once simpler and more complex than X ray dosage assessment because, although the effects of scatter were unimportant, the multiple radio-active foci required and the variety of points at which the dose must be measured added to

the difficulties. The speaker, with H. M. Parker, had outlined a system of dosage for radium therapy which he thought quite useful.

He suggested that by way of contrast with the methods of X ray and radium dosage outlined, other methods might be examined, such as: (1) *Röntgens in air.* This was a measurement of the intensity of an X ray beam, which meant that it measured the output of the X ray tube, not the dose received. (2) *Erythema dose.* This had real importance at the time when physical measurements had little accuracy, and might be regarded as an experimental assay, now replaced by dosage in röntgens. (3) *Summated röntgens to skin fields.* This method of reckoning dosage was misleading, especially if multiple fields had been used. It was much more informative to give a dose received at the point being treated, for example, the cervix. (4) *Milligramme hours or millicuries destroyed.* Doses in these terms were no longer used by radiologists who now thought of doses to tumour in terms of energy absorbed, and they therefore needed no further discussion.

Finally Dr. Paterson put forward a plea for considering, when prescribing radiation treatment, first the dose to the tumour, then the dose to the skin, and only after reaching a decision on these points, the technique to be employed.

Mr. B. W. WINDEYER detailed the international recommendations recently agreed upon in Chicago and pointed out their important features. He did not think that dosage rate in terms of r per minute had much effect on the production of reactions, but he agreed that the over-all time altered the effects and expected an advantage in the form of increased skin tolerance for longer over-all time. In treatment by radium all types of radiation, including the use of radon, must be covered and he used the Paterson-Parker charts for estimating dosage, except for certain standard applicators for small lesions.

Mr. L. H. CLARK discussed the dose received from radium applicators and described his method of obtaining homogeneous radiation. He also used the Paterson-Parker charts, with modifications made necessary by the difficulty of working with radium in unsuitable containers. He measured X ray doses by the indirect method and drew attention to the fact that although charts are drawn for a beam normal at the point of entry, there is, in fact, always some degree of tilting.

Mr. T. A. GREENE spoke of the importance of the volume effect, which often made it necessary to restrict the dose delivered, and he described his method of beam direction in relation to tumour doses.

The PRESIDENT pointed out the difficulty of arriving at any decision in international discussions and emphasised the progress that had been made. In this country there was general agreement on the necessity of a statement of tumour dose.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

AT a meeting of this society held at 11, Chandos-street, W., on March 10th, with Dr. H. C. SQUIRES in the chair, Prof. JOHN MACMURRAY read a paper on

A Philosopher's View of Modern Psychology

He began by saying that the function of the philosopher was to relate the field of the expert to the more general field in which it was included. Looking at medical science he noticed that the relation of doctor and patient, from which medical science and practice arise, was a particular type of relation between persons. It conditioned everything within the field of medicine and was itself conditioned by the nature of human relations in general. The patient is a person who is anxious about himself, who asks another person to help him. The fact that the doctor-patient relation is a relation of persons provides certain principles in itself. Just as a teacher who teaches his subject and not his pupils is a bad teacher, so a doctor who sets out to heal diseases instead of healing people will not be a good doctor. The patient as a person requiring help is the focus of all problems in medicine. If medicine treats diseases, then a classification of diseases into bodily and mental will arise in which the unity of the person is lost sight of. Physicians and psychotherapists will have different objects to treat, and the necessity of coöperation in treating a patient who is always suffering in mind, whether or not he is suffering organically, will be lost sight of. Every case which a doctor deals with arises because of the patient's anxiety about himself. His anxiety, which brings him to the doctor, is his sense that something is the matter with him. The task of the physician is to discover what is the matter. If some malfunctioning of the organism can be discovered, then it can be correlated with the anxiety of the patient about himself. If this is correct then the restoration of proper bodily functioning will remove this anxiety and bring the relation of doctor and patient to an end. But if the doctor can assure himself that there is no organic failure sufficient to account for the anxiety of the patient, what is to be done? The physician may feel inclined to say that there is nothing the matter with him. But there must be something the matter with a man who comes to a doctor when there is nothing the matter with him. The anxiety must have a cause. As it is an anxiety about himself the cause must lie in himself. If it has no observable bodily correlate the anxiety itself is a disease, and expresses the patient's sense that something is the matter with his functioning as a human being. The task of finding what is the matter and curing it is then the task of the psychotherapist.

Prof. Macmurray devoted the rest of his address to a determination of some of the general characteristics of fear as exhibited in human behaviour. He emphasised the need for distinguishing fear and its derivatives as negative motives with an inhibitory effect, from the positive motives which determine the positive life processes. He distinguished human fear from "animal" fear by the presence of anticipatory phantasy. He pointed out that in all the development of consciousness and especially in all rational reflection fear was always present. Reflection itself involved the inhibition of action. In action fear expressed itself as caution: the recognition of the possibility of mistaken behaviour and so in the distinction between right and wrong. Thus it was a mistake to maintain that fear was neurotic in itself. Nevertheless anxiety, as a pervasive fear which determined an egocentric and self-defensive attitude to life, was an expression of human malfunctioning. The rhythm of human life involved both fear to provide the motive for withdrawal into reflection and the triumph over fear to provide the return to positive activity enriched by reflection. This general diagnosis of human malfunctioning, he added, could not be complete without reference to love in relation to fear, because of the inherent mutuality or reciprocity between persons which is

the characteristic feature of human life. The environment for any person is primarily other persons. For this reason love negated by fear is the all but universal source of neurosis. Prof. Macmurray concluded by saying that these general considerations of the wider situation which conditioned psychological medicine suggested to him that he would expect that in psychotherapeutic practice the nature of the relation established between doctor and patient would play a major part in success or failure; and also that the truth of the psychological theory held by the doctor would prove of less importance in the achievement of a cure than might at first sight be expected.

REVIEWS AND NOTICES OF BOOKS

The Basis of Tissue Evolution and Pathogenesis

By ALBERT A. GRAY, M.D., F.R.S.E., formerly Lecturer on Diseases of the Ear, Glasgow University. Glasgow: Jackson, Son and Co. 1937. Pp. 92. 7*s.* 6*d.*

Dr. Albert Gray earned a world-wide reputation by his researches into the pathology of otosclerosis. These researches were greatly helped by the ingenious method which he devised to free the internal ear from its bony capsule by permeation with paraffin wax followed by immersion in very dilute acid; in this way he obtained specimens of the labyrinth far more perfect than had previously been possible, and he utilised the method in extensive studies of the human and comparative anatomy of the ear. Thus his histological work coloured his outlook on the problems of evolution, over which he had pondered from his early days. He had intended to make known his views on these problems and to publish a small book on the subject during 1936, but he died in January of that year. He had, however, discussed this work with his younger son who has now undertaken the responsibility of its publication. The manuscript was not ready for the press, and was so written over and rearranged that it was at times difficult to render it readable; the minimum of alteration has been made, and there is much repetition which Dr. Gray would doubtless have reduced if he had lived. It is with these circumstances in mind that the work now issued must be read.

The original differentiation of the tissues must have begun in the earliest stages of the evolution of the multicellular animal by the development of an external layer of cells possessed of qualities which are resistant to injury by the surrounding medium. A tear in this layer is repaired by multiplication of the cells lining its edges because these cells are best able to live on the surface, and their daughter-cells are also better adapted to a surface existence than the daughter-cells of those of the deeper layers. In this way the various tissues gradually become specialised by a process of natural selection, those cells surviving which are most able to cope with the repeated injuries caused by change of environment, and their daughter-cells possessing this quality in increasing degree in succeeding generations until the original causative injury or stimulus is eventually no longer necessary for their production. These variations are not spontaneous but the result of altered environment, and they are not purposive but due to natural selection, although they seem to acquire a purposive character. This theory does not necessitate the view that acquired characters are transmitted; what is transmitted is the faculty for repair in a particular manner from any particular stimulus, which faculty becomes increased in succeeding generations if the same stimulus persists. As a result of injury the cells which survive reproduce actively because of the room left by the death of the other cells; the young daughter-cells are not like their parents, but are comparatively undifferentiated. The daughter-cells of epithelial and masoblastic tissues are alike rounded, mobile, and phagocytic; this plastic condition makes variation more easy. A change of environment causes injury to the cells of the tissues, and the process of repair gives the opportunity for natural selection. The power of repairing an injury when it occurs is inherently, though only potentially, present in each fertilised ovum, but is different in each one. Every ovum is then destined to repair the injury in a different way, and the animal is either more or less suited than its neighbours to resist the injury the next time it occurs. In this way those which repair the injury most satisfactorily survive, and produce offspring like themselves, but each succeeding generation will on the average repair more easily than the preceding one, and thus become adapted to its environment.

There is nothing revolutionary in these speculations. The author accepts fully the process of natural selection and will have nothing to do with Lamarkianism, the inheritance of acquired characters, or the fulfilment of purpose by some mystical vitalism. Further he accepts the implications of the results obtained by geneticists and has no quarrel with Mendelism. It would seem that his thinking has been influenced by two considerations. Mutations as a cause of evolution seem unsatisfactory because there is no evidence that the right sort—i.e., mutations productive of new forms capable of standing up to the rigorous test of a natural selection—occur with sufficient frequency. Also he feels unable to accept the occurrence of spontaneous variations as adequate to provide the raw material of evolution. Further he must reject these chance variations since it is inconceivable to him that they could ever occur in that correlated order which is essential to any advance in functional efficiency. Dr. Gray's hypothesis was formulated to meet these deficiencies in the existing theories of evolution. Its obvious merit is that it does translate into actual terms of cells and tissues the reaction of the organism to changes in environment, and the author clearly apprehends that the environmental change might be described as an injury or a stimulus. At any rate, here lies the real issue. Injury in its ordinary sense—and the author uses it in the sense of pathology to include bacterial, mechanical, and other kinds of injury—is a difficult term to which to attach any meaning when one is considering (say) the origins of sexual differentiation, or for that matter any anatomical adaptation at all. Still, the author accepts this challenge and applies his theory of injury to the transformation of a limbless fish into a limbed amphibian. The very hypothetical story of the origin of the limbs in the tetrapod from the pectoral and pelvic paired fins in fishes has been recounted again and again in text-books of vertebrate morphology. To retell the story in terms of tissue injury and cell survival, to imagine the cells of a fish reacting to increasing degrees of desiccation supplies no reason why the response should have taken the form of complicated and highly organised limbs adapted for terrestrial progression.

Operative Gynecology

Fifth edition. By HARRY STURGEON CROSSEN, M.D., Professor Emeritus of Clinical Gynecology, Washington University School of Medicine; and ROBERT JAMES CROSSEN, M.D., Assistant Professor of Clinical Gynecology and Obstetrics, Washington University School of Medicine. London: Henry Kimpton. 1938. Pp. 1076. 52*s*. 6*d*.

IT is seven years since the publication of the last edition of this well-known work. The new edition shows evidence of careful revision in the light of recent research, and more than 200 new illustrations have been incorporated. The authors include in their survey of pelvic surgery all operations on the intestine and relevant renal procedures, as well as the surgery of the female genital tract. These inclusions tend to make it a rather bulky volume. The information given is interesting, useful, and well arranged. Reference is constantly made to historical sources and to modern work of accepted standard. The authors are advocates of radium therapy in all stages of carcinoma of the cervix uteri. There seems some lack of balance in allocating the same amount of space to the surgery of uterine retroversion as to that of prolapse, and also in dismissing the subject of myomectomy in a few pages.

1937 Year Book of Obstetrics and Gynecology

Obstetrics. Edited by JOSEPH B. DELEE, A.M., M.D., Professor of Obstetrics, University of Chicago Medical School. *Gynecology*. Edited by J. P. GREENHILL, B.S., M.D., F.A.C.S., Professor of Obstetrics and Gynecology, Loyola University Medical School. Chicago: The Year Book Publishers; London: H. K. Lewis and Co. 1938. Pp. 704. 10*s*. 6*d*.

THE new edition of this year book follows its customary plan. A large range of subjects is reviewed in the précis of the year's publications, with editorial comment. The summaries make interesting reading and as they are grouped according to the subject discussed, the diversity of opinion on any one of them can be perceived at a glance and evaluated at leisure. This year prominence has been given to the use of drugs in labour and their dangers. Of special interest are the sections on the physiology of the new-born, the operative treatment of complete perineal rupture, and the summary of the vast literature on endocrinology.

The Mind of Man

By WALTER BROMBERG, M.D. London: Hamish Hamilton. 1937. Pp. 323. 10*s*. 6*d*.

THE promise of the subtitle, The Story of Man's Conquest of Mental Illness, is borne out by the text of this work; the author is an enthusiast whose zeal leads him into over-emphasis. The book centres round three topics—demonology, faith-healing, and psycho-analysis; the first and last of these are treated in as much detail as if they had been written for an elementary text-book. Historical and psychiatric proportion is lost by such treatment; thus Wagner Jauregg's great discovery receives barely five lines, and psycho-analysis more than two thousand, but no doubt the layman, for whom the book is largely intended, will find it none the less engrossing. The writing is fairly restrained and inoffensive, and, although one might dispute some of Dr. Bromberg's statements (e.g., he follows Zilboorg in giving excessive importance to Weyer, yet he says nothing of Plater or, in an earlier age, of Gerson) there are few gross errors of fact except where the author's bias has been too strong for him: thus it is quite incorrect to say (p. 233) that by 1920—or by 1938, for that matter—most of the psychiatrists of Europe and America had accepted psycho-analysis as a method of investigation of infinite value for psychiatry and as a technique of treatment capable of "eradicating the roots" of neurosis. It is, however, the omissions in the book that are most important; because of them it has no claim to be taken as a serious history of psychiatry or psychotherapy.

Emergency Surgery

Third edition. By HAMILTON BAILEY, F.R.C.S., Surgeon, Royal Northern Hospital, London; Surgeon and Urologist, Essex County Council. Bristol: John Wright and Sons. 1938. Pp. 852. 50*s*.

THIS book must be one of the most widely read practical surgery books in the English language. Three editions have been called for since 1930 and each has been extensively revised, the last more than any. An experienced emergency surgeon reading this book might well find that in many conditions his own procedure differs from that recommended. But he would admit that all the methods described are effective and practical and that all occupy an established place in surgery. There is indeed an extraordinary amount of useful knowledge collected together here. The junior surgeon could scarcely have a better guide. Mr. Hamilton Bailey has done a service to the profession and to the public in collecting in such an attractive form instructions for dealing with almost any surgical emergency that may arise.

Drugs and Galenicals

Their Quantitative Analysis. By D. C. GARRATT, B.Sc., Ph.D. Lond., F.I.C., Drug Analyst, London County Council. London: Chapman and Hall. 1937. Pp. 422. 25*s*.

THIS book deals solely with the quantitative analysis of drugs. It reflects the author's wide personal experience in the London County Council's analytical laboratories and contains much original material. Existing methods are critically discussed, and the analyst may confidently adopt those here recommended which are described in detail. The determination of small quantities of poisons is discussed in several of the monographs; the book will be of great use to the toxicologist. The section on the essential oils is a model of accurate condensation. Adequate references to original papers are given at the end of each section and the index is full and reliable.

Clinical Urinalysis and its Interpretation

By ROBERT A. KILDUFFE, A.M., M.D., F.A.S.C.P., Director of Laboratories, Atlantic City Hospital. Philadelphia: F. A. Davis Company. 1937. Pp. 428. $4·00.

THIS book covers the clinical and simple laboratory analysis of urine, the interpretation of analytical results, and certain tests of function involving estimations of urinary constituents. Chapters are allotted to abnormal constituents (including drugs), bacteria and parasitic organisms, urinary sediments and calculi, pregnancy tests, and life insurance procedure. There are no important omissions. The chemical tests given are mainly modern and well-tried procedures and are simply described. The author would have done better to avoid explanations of

certain physical and chemical terms rather than to supply inaccurate notes on them; as for instance in the accounts of *p*H (p. 63) and of some of the renal function tests (e.g., p. 295). We have detected a few errors, for example, salicylates are said to give a positive Rothera test (p. 113), but as a whole the book is carefully written. The point of view throughout is that of the clinician and practitioner with few laboratory facilities, but it will be useful also to those others whose duty it is to try to supply the answers to questions posed by those in charge of sick people.

Sterols and Related Compounds

By Prof. E. FRIEDMANN, M.D., Ph.D. Cambridge: W. Heffer and Sons. 1937. Pp. 100. 7*s*. 6*d*.

THIS book is based on three lectures given at the Sir William Dunn institute of biochemistry at Cambridge; the first on sterols, bile acids, heart poisons, and saponins, the second on vitamin D, and the third on sex hormones and carcinogenic substances. Prof. Friedmann provides a lucid, connected account summarising our present knowledge of these groups of substances rather more from the chemical than from the physiological viewpoint. The book is well furnished with chemical formulæ, and contains a number of references in the text. The author takes a balanced view, considering carefully all the available evidence, of the relation between carcinogenic compounds and the sterols. It is a pity that he omits all mention of the synthetic œstrogenic compounds. In a foreword Sir F. Gowland Hopkins says that "the book contains no single redundant sentence, nor one unnecessary word," and we agree that it is admirably succinct. In one place only the words should be rearranged, where Prof. Friedmann, speaking of "the blood content of free phosphate" probably does not mean to suggest that he is capable of getting blood out of a stone.

Applied Laboratory Technique

Second edition. By JOHN A. KOLMER, M.D., F.A.C.P., Professor of Medicine, Temple University, Philadelphia; and FRED BOERNER, V.M.D., Assistant Professor of Bacteriology, School of Medicine, University of Pennsylvania. London: D. Appleton-Century Co. 1938. Pp. 893. 30*s*.

IN 1931 Kolmer and Boerner, with the assistance of a special committee of the American Association of Clinical Pathologists, for the first time brought together in one volume all the laboratory methods in general use as aids to clinical medicine. The techniques selected for description were those that had been thoroughly tried and found reliable and satisfactory throughout the world. Their book presenting as it did the experience of a large sodality of workers has proved of immense value to all engaged in clinical laboratory practice, and has done much to bring about a standardisation of clinical laboratory methods. It still remains a monument to the labours of its authors and to the vision and foresight of the executive of the American Association of Clinical Pathologists, and though now seven years old it is hardly out of date. That is not to say that a new edition incorporating improvements in technique and new work will not be welcomed. Every chapter has been thoroughly revised; a few methods have been dropped and many new ones included. Five additional chapters have been added; of these those on the hormonal diagnosis of pregnancy, chorionepithelioma, hydatiform mole, and teratoma testis, and on the laboratory diagnosis of mycotic infections are particularly valuable. The latter contains much matter hitherto not available in any single work of reference.

British Journal of Children's Diseases

IN the January-March issue Dr. F. R. B. Atkinson contributes an exhaustive paper on Gaucher's Disease in Children based on a study of 108 published cases. There are tables devoted to the blood, chemistry of the spleen and details of the recorded cases, and a bibliography of 86 references.—In their article on the Anomalous Forms of Varicella Dr. G. W. Ronaldson and Dr. W. Howlett Kelleher record 8 personal cases illustrating prodromal scarlatiniform rashes, attenuated forms of the disease in which the modification was natural or the result of the intra- or per-cutaneous introduction of lymph from a recent chicken-pox vesicle, varicella bullosa, varicella gangrænosa, varicella hæmorrhagica, and varicella herpetiformis.—Mr. A. Ralph Thompson's paper on the Clinical Anatomy of Cases of Epispadias and Extroversion of the Bladder is based on 9 personal cases of epispadias and 23 of extroversion of the bladder. The following classification is adopted: (1) Epispadias (*a*) in males, (*b*) in females. (2) Extroversion of the bladder with full development of the genitals and scrotum. (3) Extroversion of the bladder with incomplete development of the scrotum and the testicles not fully descended. (4) Extroversion of the bladder with bifid penis and scrotum. (5) Extroversion of the bladder with bifid penis and scrotum, and the formation of a proximal urethra which is capable of controlling the act of micturition, if steps are taken to ensure this. (6) Extroversion of the bladder with intestinal connexion, and the formation of a normal urethra. (7) Extroversion of the bladder in females.

The abstracts from current literature are devoted to treatment.

NEW INVENTIONS

A NEEDLE FOR VARICOSE VEINS AND EMBOLECTOMY

THE use of a long ball-ended needle for the treatment of extensive varicose veins was described three months ago (Stevenson and Walker 1938). The instrument has also been found of service in facilitating the removal of an embolus from the main artery of the upper limb (Stevenson 1938).

The needle, which is made by Messrs. Down Bros., Limited, London, is 9–12 in. long and fits a standard glass syringe. The ball through which the end of the needle passes is a little over ¼ in. in diameter.

9–12″

A small transverse incision is sufficient for the purpose of admitting the head of the needle and withdrawing the clot. It is suggested that this incision, when sewn up, causes less constriction of the vessel than the longitudinal one. The smooth surface of the ball, which is smeared with vaseline before use, does not in any way damage the delicate intima. Strong suction may be applied within the vessel without its walls blocking the lumen of the needle.

References.—Stevenson, D. L., and Walker, R. M. (1938) *Lancet*, Jan. 1st, p. 27. Stevenson (1938) *Ibid*, March 26th, p. 723.

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CONTROL OF THE COMMON FEVERS

UNDER this heading we publish to-day the first of a series of articles on the preventive treatment of infections. No attempt will be made to press these articles into a common mould. The growing point of our knowledge is sometimes on the epidemiological side, sometimes in the pathological laboratory, and sometimes in clinical practice at schools and institutions. Scarlet fever, for instance, although it is a clinical entity, is not, like diphtheria and enteric fever, an epidemiological entity. The chief interest in diphtheria lies in the possibility of eradicating the disease by means of immunisation, whereas in measles it centres round the substitution of mild for severe attacks. Dysentery has become prevalent throughout the country almost unnoticed, and there may be ignorance of the very existence of undulant fever. The object of this series then is to present experience of the various common fevers as the problem appears at the present time. There is reason to think that this part of medicine is one in which practice lags unduly far behind knowledge; for now that typhoid and diphtheria are no longer treated in general hospitals the medical student is less familiar with them than he was, and in undergraduate days he sees little of such infections as measles and whooping-cough which are not even notifiable.

Measles, the subject of the first article, occupies a unique position among the few diseases that are fully controllable by specific means. Even the most violent opponents of "inoculation" in any form can scarcely object to the injection of human serum; it has none of the disadvantages, either sentimental or practical, of horse-serum or of immunising agents prepared from micro-organisms. Nevertheless its proper use can be as beneficent in effect as any form of specific therapy yet at our disposal. Although the serum of recent convalescents is the most effective, that of any adult who has had the disease even in distant childhood contains the protective antibody and will serve if given in somewhat larger amount. Given within five days of exposure to infection it will prevent the disease altogether. But this protection, like any other form of purely passive immunisation, is transitory. Given within the next two or three days, or in smaller amount at an earlier stage, it will secure a modified attack, a brief period of febrile catarrh with the characteristic rash but with little general disturbance and almost no liability to pneumonia or other complications or to subsequent ill health. This miniature version of what measles may be is nevertheless followed by permanent immunity; indeed, the serum of convalescents from such an attack is said to have a protective capacity in others equal to that of sufferers from the fully developed disease. The dose of serum necessary to secure these results varies according to its source, the age of the child to be protected, and the stage at which it is given. A syringeful of blood which anyone can spare may save a child from a dangerous and debilitating illness; a bleeding on the transfusion scale will furnish the means of protecting several dozen children.

Why is this valuable method still so little used? There are perhaps three reasons for this, of which the first is that the whole of the medical profession is not yet so conversant with it as to create a full demand for it or to ensure its right application. The second is the frequent difficulty of ascertaining the date of exposure to infection and thus calculating with certainty the dose of serum and the time of its administration to secure the desired result. As Dr. GUNN points out, a legitimate—perhaps an ideal—way of overcoming this difficulty is deliberately to expose children to infection; the old-fashioned "measles tea-party," originally aimed at getting all the attacks in the family over simultaneously, can now be revived with a better object. But a difficulty more serious than either of these is that of obtaining serum. A few hospitals and local health authorities maintain supplies, of which some are available for private practitioners, but usually the supply is limited, and the serum is only provided for infants, in whom it is advisable to prevent an attack altogether. The only product available commercially is a placental extract which is undoubtedly an efficient prophylactic but may cause unpleasant reactions. Whose business should it be to make good this defect? It certainly appears to be within the province of local health authorities, and at the same time there seems to be no very obvious reason why supply should not be undertaken by commercial houses. Many people would be willing to give blood both for a useful cause and for the substantial payment which would be made possible by a moderate selling price. It is clearly necessary that some responsible body should move in this matter in order that one of the most valuable of all remedies in medicine may become more generally available.

SHORT WIRELESS WAVES IN EXPERIMENTAL CANCER THERAPY

THE use of electromagnetic waves in order to subject cancer to heat therapy as distinct from surgical diathermy was advocated sporadically by various workers in the days when only the long-wave diathermy was available. The principal objection to the procedure was the danger of burns, but difficulties in application by means of direct contact through saline pads were also considerable. RHODENBURG and PRIME [1] and WESTERMARK,[2] however, achieved some measure of success in the treatment of animal tumours, and the

[1] Rhodenburg, G. L., and Prime, F., *Arch. Surg., Chicago*, 1921, **2**, 116.
[2] Westermark, N., *Skand. Arch. Physiol.* 1927, **52**, 55.

former workers made the interesting, but not yet fully confirmed, observation that the combination of relatively small doses of diathermy with X ray treatment gave results better than either alone. With the introduction of "short" wireless waves (15–50 m.) and later on "ultra-short" waves (below 15 m.) new possibilities were opened up, for not only could these waves be applied by means of insulated electrodes, without metallic contact, but their method of passage through the tissues was shown to differ from the purely conductive transport of the longer waves. Thus more even penetration can be secured, and at the same time the danger of burning is far less, since with a lower applied high-frequency voltage shorter waves will produce the same degree of heating. The pioneer work on the action of ultra-short waves on experimental tumours was done by SCHERESCHEWSKY [3] in U.S.A. and by PFLOMM [4] in Germany. Both workers obtained regression of transplanted tumour by local application of ultra-short waves, but their results were not quite clear-cut. PFLOMM used a strain of rats in which the Jensen sarcoma grew poorly, and the tumours grew again after a partial regression; while in SCHERESCHEWSKY'S work it seemed, at any rate in the earlier experiments, that the action was not due to heat. This impression was based on the fact that after treatment the tumours did not feel warm, but later more accurate measurements [5] convinced SCHERESCHEWSKY that the cures observed were in fact due to heat. In the meantime however, REITER,[6] working in Siemens's laboratory in Germany, had vigorously championed the so-called specific action of these waves. Not only did he claim that heat was not responsible but also that an extremely critical wave-length was needed to bring about regression of animal tumours. Work of TAYLOR [7] shed doubt on the accuracy of these observations, and as a result of very thorough investigations by DICKENS, EVANS, and WEIL-MALHERBE [8 9] it was finally shown that the effects observed by REITER were due entirely to the heat generated in the tissues by ultra-short waves, and were independent of the particular wave-length used. Two years ago the whole position with regard to "specific actions" was reviewed by CURTIS, DICKENS, and EVANS,[10] who came to the conclusion that no definite case for specific action has been made out, and that the onus of proof rests with those who claim that these effects exist.

It seems, therefore, that we may accept the action of these waves as a heat action. The possibility of their application to human cancer is still uncertain, for in the more reliable animal experiments reported the rise of temperature needed to secure regression of the tumours was considerable. The period of application in these experiments was, however, short; and in dealing with human cancer it may be necessary to apply less drastic treatment over a longer period. This could be done either by local application, using short-wave diathermy, or by general hyperthermia induced either by short waves or by radiant heat. So far, the only serious attempts reported at treating human cancer by this method are those of WARREN,[11] who maintained a number of patients suffering from cancer deemed incurable at 41·5° C. (rectal temp.) for periods up to 24 hours. Although in no case was anything approaching a cure achieved, the hyperthermia seemed to have a definite destructive effect upon the tumour cells. According to RHODENBURG,[12] who has studied spontaneous regressions accompanying clinical fevers in cancer cases, an important feature may be the maintenance of temperatures of 104°–105° F. for a period of 48–96 hours. Even on the assumption that the observed regressions were due solely to the temperature, it must be emphasised that no thermal treatment sufficiently prolonged and intense to be effective has been tested; and that any such attempt should be left to those who realise the danger and discomfort that such applications may bring in their train if they are sufficiently prolonged and thorough to have any chance of success. In local treatment the possibility of using temperatures somewhat higher than could be tolerated in general hyperthermia renders the outlook perhaps a little more hopeful.

Extensive investigations on laboratory and clinical lines are being made at the North of England branch of the British Empire Cancer Campaign. There is now no reason to believe that the effects of certain wave-lengths are specific, and the wave-length to be used is largely determined by convenience in application. Thus for general hyperthermia, or for local hyperthermia by means of the inductotherm (coil heating), waves above 15 m. will usually be most suitable, while for local heating by means of electrodes the ultra-short waveband offers the advantage of greater heat production for lower voltage, and consequently less danger of burning. For practical purposes, 3 m. may be taken as the lower limit of usefulness of these waves, owing to the loss of efficiency in generating and transferring the shorter wave-lengths. Experimentally, however, the still shorter radiations, which begin to approach the infra-red region, are of interest, although, as yet, it has only been possible to produce these in very feeble intensity. VAN EVERDINGEN [13] has very recently studied the action of waves of 60–25 cm. on mice bearing a transplantable lymphosarcoma or tar carcinoma without any great effect being observed, and he concludes that a retarding effect of these waves on malignant tumours is not very probable. But it appears doubtful if the intensity of radiation was really adequate in these experiments for the irradiation of the whole animal and it might have been more hopeful to have tried the effect of a local application.

[3] Schereschewsky, J. W., *Publ. Hlth Rep., Wash.* 1928, **43**, 927.
[4] Pflomm, E., *Münch. med. Wschr.* 1930, **77**, 1854.
[5] Schereschewsky, J. W., *Radiology*, 1933, **20**, 246.
[6] Reiter, T., *Disch. med. Wschr.* 1933, **59**, 160, 1497.
[7] Taylor, H. J., *Brit. J. Radiol.* 1935, **8**, 718.
[8] Dickens, F., Evans, S. F., and Weil-Malherbe, H., *Amer. J. Cancer*, 1936, **28**, 603.
[9] — — — *Ibid*, 1937, **30**, 341.
[10] Curtis, W. E., Dickens, F., and Evans, S. F., *Nature, Lond.* 1936, **138**, 63, 1100.
[11] Warren, S. L., *Amer. J. Roentgenol.* 1935, **33**, 75.
[12] Rhodenburg, *J. Cancer Res.* 1918, **3**, 193.
[13] van Everdingen, W. A. G., *Ned. Tijdschr. Geneesk.* 1938, **82**, 284.

INSULIN SHOCK IN PSYCHIATRY

THE records of investigations with the insulin treatment of schizophrenia increase rapidly, though many of them are repetitive rather than original in substance. Besides the primary issue—the efficacy of the treatment—subsidiary problems, for example the significance of convulsions (see p. 776), the relation of blood-sugar level to "shock," the possible modifications of the method, are now being examined. The question of priority [1] has also been brought forward, as might have been predicted. PÖTZL has himself said [2] that the method introduced by SAKEL in his clinic at Vienna was the audacious continuation of earlier work. PASCAL had published in France in 1926 her book on the treatment of psychoses by shock, including some instances of insulin shock; JULIUS SCHUSTER [3] reported from Hungary in 1928 the favourable results of treating a series of schizophrenic patients with large doses of insulin, and in the next two or three years JASCHKE, HAACK, and others pointed out the symptomatic value of insulin treatment, while STECK [4] in Lausanne pursued an independent line of attack. Several psychiatrists had been concerned with the treatment of delirium tremens [5] by fairly large doses of insulin, and it is noteworthy that SAKEL'S therapeutic procedure with schizophrenia developed out of his earlier efforts to treat drug-addiction by insulin. Why he should have taken this step, passing from morphinism to schizophrenia, is still obscure; it was either an entirely empirical venture or based upon erratic theory. This matter, and others important in the genesis of the method, are reviewed in an admirably balanced and critical article by B. SLOTOPOLSKY-DUKOR,[6] himself one of the earlier workers in the field, who provides a more informative aperçu of the background of the new treatment than any hitherto available.

SAKEL'S great claim to recognition lies in his bold forcing of the method to its furthest—Prof. PÖTZL would say its logical—conclusion. Any rivalry between SAKEL'S insulin method and MEDUNA'S cardiazol method is less a question of priority than of efficacy and independence: many writers follow M. MÜLLER in protesting that the two methods are complementary, but this hope has not been confirmed, except in isolated cases.

The fact that there are discrepancies between the dose of insulin and the blood-sugar level attained, and between the blood-sugar level and the severity of the reaction to insulin has been remarked and pondered by various workers.[7] [8] In a recent communication HEILBRUNN [9] maintains that there are always severe clinical signs when the blood-sugar content falls to 30 mg. per 100 c.cm. or lower, provided that the fall in the blood-sugar has occurred rapidly and the sugar continued at the lower level for a fairly long time. Even if this congruence between hypoglycæmia and clinical signs is established within the conditions stated, it leaves unexplained all the other cases in which the provisos are not fulfilled, as well as the cause of this rapid descent and prolonged stay at a low level of the blood-sugar. In this connexion there are also problems of idiosyncrasy, "sensitisation," and habituation on which adequate biochemical and pharmacological investigations are still to seek. Whether insulin treatment has any effect on mental conditions other than schizophrenia has not been much tested. A few workers have applied it to obsessional neurosis, usually without benefit, but two Australian physicians [10] have lately succeeded in producing excellent recovery, which they have good cause for attributing to insulin shock, in a severely obsessional patient who had hitherto been treated by psychoanalysis without benefit. Such a result, however, cannot by itself be regarded as carrying weight.

[1] *J. Amer. med. Ass.* Jan. 8th, 1938, p. 144.
[2] *Wien. klin. Wschr.* Feb. 11th, 1938, p. 181.
[3] *Arch. Psychiat. Nervenkr.* 1928, **85**, 779.
[4] Comptes rendus du Congrès des aliénistes de France à Rabat, 1933, p. 441.
[5] Klemperer, E., *Mschr. Psychiat. Neurol.* 1929, **74**, 116.
[6] *Schweiz. med. Wschr.* Feb. 12th, 1938, p. 148.
[7] Katzenelbogen, S., Harms, H. E., and Clark, D. A., *Arch. Neurol. Psychiat.* January, 1938, p. 1.
[8] *Schweiz. Arch. Neurol. Psychiat.* 1937, **49**, Suppl.
[9] *Wien. klin. Wschr.* Jan. 28th, 1938, p. 114.

INDUSTRIAL EYE INJURIES

THE continued prevalence in various industries of serious injuries to the eye is profoundly unsatisfactory; they are mainly preventable but remain unprevented. In the annual reports of the chief inspector of factories they amount to about 4 per cent. of the total of industrial accidents, but these reports include only those accidents which have disabled workmen for more than three days. A truer picture of their frequency is given by the attendances at the Royal Eye Hospital, where some 7000 industrial injuries are treated in the year. The chief causes of these injuries naturally vary in different districts according to the predominant industries. In Southwark the engineering and metal trades are responsible for four out of five of the injuries, about half being incurred whilst grinding with emery wheels. The remainder are caused in building, coke making and transport work, and in chemical, paper and printing factories. In other parts of the country mining and quarrying may be the main sources. Corneal foreign bodies and corneal abrasions are the commonest lesions at the Royal Eye Hospital, and these come almost entirely from the metal trades. Subtarsal foreign bodies are remarkably rare, possibly because the immediate discomfort which they produce leads patients to seek advice from their own doctors before there has been much damage. The remaining cases come under the headings of intraocular foreign bodies, perforating injuries, chemical burns, injuries due to lime, concrete, and cement, and electric welding conjunctivitis.

In a recent lecture to the London industrial committee of the National Safety First Association Mr. JOSEPH MINTON put the proportion of industrial eye injuries which are preventable as 80 per cent. That they are not prevented is

[10] Farran-Ridge, C., and Reynolds, P. G., *Med. J. Aust.* Jan. 15th, 1938, p. 100.

due partly to the non-provision of safety measures by employers, especially in the smaller firms, but more to the indifference of the workmen themselves. This lack of interest in preventive measures was commented on by the departmental committee on the causes of blindness in 1922, and at that time Sir ARNOLD LAWSON remarked that it was doubtful whether there would be much improvement until compulsion was used. An Industrial Eye Injuries Committee, the first of its kind, has now been established at the Royal Eye Hospital to coördinate the efforts of all concerned in the prevention of these injuries. The committee have arranged an exhibition of the safety appliances available for different industrial processes in the out-patient room of the hospital, where patients cannot fail to notice it. The appliances shown are of two main types: goggles, masks, veils, and eye-screens to be worn by the workmen, and screens and guards to be attached to machines. All casualty patients are now advised as to the necessary protection for their type of work and where a number of patients come from one factory the employer is written to advising him of the steps he should take. In future employers will be able to address their inquiries about suitable protective measures direct to the committee, and it is hoped that the propaganda of this body, with the help of employers, trade-unions, and insurance companies, will be successful in persuading workmen that the measures are worth taking.

ANNOTATIONS

COTTAGE HOSPITALS

THE rapid increase in the number of cottage hospitals throughout the country since the first was established at Cranleigh in 1859 is evidence of the demand for inexpensive institutional accommodation for patients who need more nursing or other attention than can be given at home and yet do not require the resources of a fully equipped hospital with a consultant staff. These small local hospitals are presumably so popular, more particularly in rural districts, partly because they are easily accessible for both the patient and his visitors and partly because the patient can there continue to be treated by his own doctor. In their report on the hospitals of Cornwall, summarised in our last issue (p. 747), Dr. Eric Donaldson and Mr. R. H. P. Orde remarked on the fact that no general agreement has ever been reached as to the precise functions of the cottage hospital. Mr. W. M. Goodenough defined [1] a cottage hospital at the Voluntary Hospitals Conference in 1934 as one in which specialists were not regularly or easily available, where there were no resident medical officers or highly specialised equipment, and where the staff consisted of local general practitioners; but it would be difficult to find any description which would apply to all. At present the functions which they purport to perform vary from little more than zero to practically those of a modern general hospital, and there is similar variation in their conditions of admission, their methods of staffing, of nursing, of administration, and so on.

In any particular town or district the range of hospital treatment possible depends primarily upon the available professional skill, accommodation, and equipment. Unless the town is large and wealthy it can neither provide an adequate living for the consultant and the specialist, nor can it find the money for the costly buildings and apparatus which he requires. Whatever hospital system is adopted, whether voluntary or State, full-range specialist services must of necessity be concentrated in centres of population. Towns of moderate size may be able to afford a well-equipped hospital of 200 beds or more, but they are not large or wealthy enough to provide professional skill of sufficient status to satisfy the requirements of the general practitioners of the district. In many cases, therefore, owing to the distance from any large hospital with a specialist staff, cottage hospitals have been thrown very much on their own resources and have come to regard themselves as self-contained units able to deal with anything that may arise without outside help or advice. This view is clearly fallacious; between the small hospital in the village and the general hospital in the big city there is an essential difference of function which cannot be disregarded without detriment to the patient.

Dr. Donaldson and Mr. Orde suggest that a cottage hospital should be defined as one with not more than 50 beds, staffed by all the general practitioners of the area, and reasonably well equipped to deal with emergencies in the neighbourhood, such as patients requiring immediate operation or those whose condition would make it unsafe for them to travel a long distance in an ambulance. It would, for instance, provide first-aid for fractures sufficient to allow them to be sent safely to a fracture clinic, and would as a rule deal with the acute medical case. They suggest also that patients operated on in a general hospital should be transferred to a cottage hospital for after-treatment under their own doctors. With modern transport facilities there should be no objection to limiting cottage hospitals to emergencies, cases too trivial for the attention of a general hospital, and those who are semi-convalescent. With effective coördination, such as might be provided by an advisory committee representing all the hospitals in the district, this degree of limitation should enhance the efficiency of existing rural services.

[1] *Lancet*, 1934, **1**, 1355.

THE INHERITANCE OF BLOOD GROUPS

THE search for greater differentiation between the heritable blood characteristics of individuals is still being pursued all over the world. Dr. Dawood Matta confirms [1] the existence of the subgroups A_1 and A_2, which are now fairly generally accepted and which G. Schrader [2] believes to be demonstrable with sufficient certainty for use in legal proceedings. Unlike Schrader, Dr. Matta also accepts the subgroups B_1 and B_2. The distinction is quantitative only, and these two pairs of subgroups have a very limited application to paternity disputes. Until recently the character O was thought to consist merely in the absence of agglutinogens from the red cells, but F. Schiff [3] declared that O cells contained an agglutinogen for

[1] A Critical Investigation of the Blood Groups, and their Medico-Legal Application. 1937. Cairo: The Egyptian University; Faculty of Medicine. Publication No. 11. Pp. 231.
[2] *Med. Klinik*, Feb. 4th, 1938, p. 141.
[3] Die Blutgruppen u. ihre Anwendungsgebiete, Berlin, 1933, p. 24.

which the agglutinin α_2 was specific. Dr. Matta confirms this observation, and also records the presence of agglutinogen O in the cells of certain AB persons. On the basis of its quantitative variation in the cells of the various subgroups, together with the distribution of the A and B agglutinogens, he formulates a new classification of 13 subgroups. The results which led to this classification cannot, he says, be fully explained by any of the current theories of blood-group heredity. He explains it himself by the hypothesis that the agglutinogen O, as well as A and B, is a Mendelian dominant and that the genotype of each individual is composed of four genes representing one, two, or three agglutinogens, two of which are transmitted from each parent to the child. He admits that he has so far tested this hypothesis only on 99 families. He agrees with V. Friedenreich's observation of a weak type of N agglutinogen. His attitude towards the application of blood-group determination to questions of disputed paternity seems unduly severe, for he suggests that it should be restricted to exclusions based on the simple Mendelian law that a child cannot possess either of the dominant agglutinogens A and B unless it was present in one of the parents. While he may well be right to avoid the dubious ground of quantitative estimation, the M and N factors have long been deemed as reliable a basis as the A and B for exclusions of paternity.

PROGRESS OF THE RÖNTGEN

"The röntgen (symbol r) shall be the quantity of X- or gamma-radiation such that the associated corpuscular emission per 0·001293 gramme of air produces, in air, ions carrying 1 electrostatic unit of quantity of electricity of either sign."

SUCCESS in the treatment of disease by any form of radiation depends essentially on the accurate measurement of the quantity delivered at the spot where any tissue is being irradiated. This was made clear enough at an important meeting of radiotherapists reported on page 782. The most satisfactory method of measuring X rays is founded on the determination of the electronic or corpuscular ionisation liberated in air by the radiation and this is the basis of the international unit of X ray quantity now adopted—the röntgen (r). The physical questions involved are complex, and to some extent controversial, but we may assume that in the case of X rays it is possible to arrive at a measurement of ionisation which approximates, in stated circumstances, to a measurement of the actual absorption of energy by the soft tissues of the body. The International Radiological Units Committee, which met during the Chicago congress last September, considered whether the use of the röntgen could now be extended not only to every class of X rays but also to gamma rays. The advantages of a common unit are obvious, both for comparing and combining X ray and gamma ray therapy, but international approval was not reached at the Zürich congress of 1934 on account of discrepancies in the physical measurements. Since that time, however, more accurate determinations have been made by Jaeger (*Phys. Zeit.*, 1934) for X rays up to 500 kv. and by Kaye and Binks (*Proc. roy. Soc.*, 1937) for gamma rays using a free-air ionisation chamber measuring 12 × 10 ft. These large-chamber measurements have provided a standard of reference for calibrating special small ionisation chambers, and important work has been done by L. H. Gray (*Brit. J. Radiol.* 1937, **10**, 600) and W. V. Mayneord (*Ibid*, p. 365) on indirect determination in terms of ionisation of the absolute increase of energy of the absorbing medium. The British X Ray and Radium Units Committee therefore found it possible to submit, through their delegates (Dr. N. S. Finzi, Prof. F. L. Hopwood, and Mr. G. W. C. Kaye, D.Sc.), a memorandum recommending the adoption of the röntgen as the only basis for both X rays and gamma rays, and the International Committee, after much discussion, decided to adopt a provisional general definition of the röntgen until the next congress, when it is hoped to submit a more exact definition, which will include all classes of ionising radiation, for example neutrons. In the meantime the various national laboratories will continue to coöperate in standardising units, technique and measuring instruments for radiotherapy.

MATERNAL AGE AND FŒTAL MALFORMATION

IN the Ingleby lectures of 1927, Still [1] drew attention to the importance of maternal age and birth order as predisposing factors in cases of congenital diseases. The subject has recently been investigated extensively in England and in the United States. An analysis of the maternal ages at the births of 607 congenitally malformed children, made by Murphy,[2] led to the conclusion that the affected child was likely to be fifth or later in the order of birth in the family. The probability of malformed offspring was increased slightly after the mother had reached the age of 30 years and was increased greatly after she had attained the age of 40 years. The commonest type of malformation was congenital hydrocephalus. An inquiry into the origins of a series of 294 cases of fœtal malformation, which occurred in a series of 13,964 consecutive births in the Liverpool Maternity Hospital, was conducted by Malpas.[3] The maternal age and birth order of each case were recorded. Congenital hydrocephalus, again, was the commonest abnormality. Comparison with the total number of births showed clearly that the incidence of hydrocephalus increased as maternal age increased. With regard to anencephalus, which was the next most common abnormality, the association with advanced maternal age was also marked. It has long been recognised that the incidence of mongolism is related to birth order or maternal age; mongolian idiots are much more likely to be born to mothers over the age of 35 than to younger mothers. The comparison, made by Jenkins,[4] of the distribution of maternal ages at the births of mongolian idiots with the ages at the births of the total children in the general population showed that the probability of the birth of a mongol child increased rapidly with maternal age. Jenkins quoted material, collected by van der Scheer and Orel, which showed that the age of the father was likely to be of less importance than the age of the mother. He also took the view that an abnormally long interval before the birth of a mongolian idiot was a predisposing factor.

The most recent survey of the literature and data bearing on the question of the relationship of mongolism to maternal age is that of Bleyer,[5] who has collected facts about 2822 cases of mongolism from institutions in the United States and Canada, from the literature, and from private sources. His analysis of the material, by Jenkins's method, demonstrates convincingly the correctness of the view that advanced maternal age is one of the chief predisposing factors in the causation of the disease in question. Special statistical techniques, such as have been proposed

[1] Still, G. F., *Lancet*, 1927, **2**, 795 and 853.
[2] Murphy, D. P., *Amer. J. Dis. Child.* 1936, **51**, 1007.
[3] Malpas, P., *J. Obstet. Gynæc.* 1937, **44**, 434.
[4] Jenkins, R. L., *Amer. J. Dis. Child.* 1933, **45**, 506.
[5] Bleyer, A., *Ibid*, 1938, **55**, 79.

by Penrose,[6] are required for separating the effects of this cause from other possible predisposing factors, such as advanced paternal age, reproductive exhaustion due to repeated pregnancy, or long interval between births. The effect of maternal age is so strong that it does not seem possible to detect any residual effect due to these other variables. At present there is insufficient evidence on which to decide whether maternal age, birth order, or some other related factor is the chief predisposing cause in the case of congenital hydrocephalus, but it appears that the positive association with maternal age, in this and in some other congenital deformities, though significant, is not so strong as it is in the case of mongolism.

DIET AND INSULIN SENSITIVITY

In 1924 Abderhalden and Wertheimer found that variations in the composition of the diet of a normal animal alter its sensitivity to the hypoglycæmic action of insulin. In general a high-carbohydrate diet increased insulin sensitivity and a high-fat diet or starvation decreased it. Two years later Aldersberg and Porges demonstrated on healthy human subjects that while a carbohydrate-poor diet decreases sugar tolerance, a diet rich in carbohydrate has the reverse effect. These observations have been widely confirmed and accepted.

In 1932 Himsworth [7] brought forward the attractive idea that insulin is secreted by the pancreas in a physiologically inactive form, and that this form is converted into active insulin by an activator, "insulin-kinase," believed to be produced by the liver. The increase in carbohydrate tolerance and in insulin sensitivity following a diet high in carbohydrate was explicable on the basis that the administration of carbohydrate stimulates production of insulin-kinase. Himsworth's hypothesis was largely based on the form of the blood-sugar curves obtained in numerous experiments on the action of insulin, and although much cognate evidence was later brought forward, any positive demonstration of the existence of insulin-kinase in liver tissue was lacking until eighteen months ago, when a substance believed to fill the bill was demonstrated in liver extracts by Ross.[8] This investigator, taking the existence of insulin-kinase as axiomatic, showed that the administration of liver extracts improved sugar tolerance in cœliac disease and a number of other conditions. Himsworth [9] had been unable to detect any influence of liver preparations on the sugar tolerance of the normal subject.

Himsworth's hypothesis explained a dietetic increase in insulin sensitivity in terms of the greater efficiency of insulin activated by insulin-kinase. The observations were also explicable however on the basis of the removal of an inhibitor of the action of insulin, rather than the addition of an activator. Although the idea of an inhibitor seemed less probable than that of an activator when Himsworth first propounded his hypothesis, recent investigations into the rôle of the pituitary gland in carbohydrate metabolism have established the fact that a substance present in the anterior lobe can diminish or even abolish the hypoglycæmic action of insulin. The resemblance of the changes in insulin sensitivity brought about by experimental variations in the intensity of anterior pituitary action, and those resulting from changes in the diet, was very suggestive,[10] and recently Himsworth and Scott [11] have pursued this suggestion. Their results show that the changes in insulin sensitivity and sugar tolerance normally brought about in rabbits by changing the carbohydrate content of the diet are abolished in the absence of the pituitary gland. Furthermore, in hypophysectomised rabbits receiving a high-carbohydrate diet, the administration of a suitable anterior pituitary extract results in an impairment of sugar tolerance and a decrease in sensitivity to insulin similar to that occurring when normal animals are given a low-carbohydrate diet. These observations lead Himsworth and Scott to suggest that the reduction in sugar tolerance and in insulin sensitivity resulting from a low-carbohydrate diet are better explained by an increased secretion of the "anti-insulin" substance of the anterior hypophysis than by the action of an activator; although, as they point out, other factors may also be concerned. It is clear, however, that the insulin-kinase and pituitary-inhibitor theories are not mutually exclusive, since the production of insulin-kinase may be controlled by the anterior hypophysis. The assumption that a secretion of the anterior pituitary gland has an inhibitory action on the production of insulin-kinase by the liver is perhaps no more difficult than *le premier pas*.

If insulin-kinase is no more, how are Ross's results to be explained? It must be confessed that at the moment no obvious explanation is forthcoming. But facts take precedence of explanations, and it would be unfortunate for the progress of research if the discovery of new phenomena did not sometimes spring from a hypothesis that ultimately proved to be incorrect.

BLOOD LOSS DURING OPERATIONS

Few surgeons could make an accurate quantitative guess of the amount of blood lost during any particular operation. White and others [12] have recently tried to estimate blood loss by extracting the blood from towels, swabs, sucker-bottle, and so forth, and determining colorimetrically the amount of hæmoglobin present. According to this method of measurement during an operation for hernia as little as 5–10 c.cm. of blood was lost, and in extensive abdominal operations the quantity was usually 200–300 c.cm. During a radical excision of the breast which is regarded as the operation in general surgery in which hæmorrhage is usually the most severe, the quantity measured was 1270 c.cm. It is generally recognised that operations on the brain and spinal cord may be associated with a heavy loss of blood, and the figures for 37 such operations are illuminating. During the simplest procedures of exploratory craniotomy and biopsy, blood loss varied between 500 c.cm. and 900 c.cm. This figure commonly rose to 1200 c.cm. if the tumour was removed. In cases of vascular meningioma bleeding was much more profuse, at times exceeding 2000 c.cm.

These observations emphasise what is perhaps the greatest difficulty encountered by the neurosurgeon. Not only may the tumour itself be of a very vascular type, but the tissues to be divided during the preliminary steps of exposure have a liberal blood-supply. Horsley's bone wax, silver clips, endothermy, and pieces of muscle are all of the utmost value, though at times the flow of blood may be wellnigh uncontrollable. Careful hæmostasis is time-consuming and to

[6] Penrose, L. S., *Proc. roy. Soc.* B, 1934, **115**, 431.
[7] Himsworth, H. P., *Lancet*, 1932, **2**, 935; and *Clin. Sci.* 1933, **1**, 1.
[8] Ross, C. W., *Lancet*, 1936, **2**, 556; and *Trans. R. Soc. trop. Med.* 1936, **30**, 33.
[9] Himsworth, *Trans. R. Soc. trop. Med.* 1936, **30**, 54.
[10] See Marks, H. P., *Proc. R. Soc. Med.* 1936, **29**, 663.
[11] Himsworth and Scott, D. B. McN., *J. Physiol.* 1938, **91**, 447.
[12] White, J. C., Whitelaw, G. P., Sweet, W. H., and Hurwitt, E. S., *Ann. Surg.* February, 1938, p. 287.

some extent this slowing up of the operation is beneficial, for the patient is likely to withstand the loss of a large quantity of blood if it is spread over a considerable period of time. It is well to remember, however, that the successful completion of any big cranial operation in the face of great technical difficulties usually depends upon the transfusion of blood, and the advantages in blood loss of a slow pace must be cancelled to some extent by the added toxic effects of prolonged anæsthesia.

THE DEPOSIT GAUGE

Two sections of the latest report [1] of the Atmospheric Pollution Research Committee deserve special attention. The first describes the purpose and meaning of the observations made with the deposit gauge. The gauge will not only show how much dust falls in a particular area but will also indicate the sources from which it comes. For example, tar is given off in the early stages of heating of coal or wood, and a high deposit can only be due to pollution from domestic chimneys or very inefficient industrial furnaces. Similarly a high deposit of other carbonaceous matter, consisting of fine particles of fuel which have escaped with the chimney gases, indicates bad adjustment of the air-supply or other conditions, as when pulverised fuel is burned in badly designed furnaces. The second section refers to the importance of the site of recording instruments. Deductions cannot fairly be drawn between the readings in different localities unless the positions of the instruments are fully comparable, a fact which must be borne in mind when observations are to be made in new districts. Deposit gauges give reasonably accurate readings of the impurity deposited in their own area, but their accuracy is more doubtful when applied to larger areas even in the same vicinity. It is possible to locate a single gauge so that it will represent the average deposit for a town, and, apart from the need for caution when comparing town with town on the basis of a single gauge, such a gauge will be quite sufficient to show whether the condition of the atmosphere over a moderately sized area is improving or not.

PROLONGED DISABILITY FOLLOWING FRACTURES

THE swollen and painful hand or foot is a most troublesome type of disability that may persist long after repair of a fractured limb. Fraser B. Gurd,[2] during a wide experience of accident insurance work, has examined the causes which lead to dispute between the patient and the employer about ability to return to work. In most of these cases he finds that the radiogram demonstrates bone atrophy. This atrophy is, in his opinion, not merely the effect of disuse; it is a direct outcome of the hyperæmia of the limb and associated with the swelling. The bone tissue is not affected alone. Gurd believes that there is a wide degenerative, or retrogressive, change affecting ligaments (particularly at their bone attachments), articular cartilage, and articular membranes. All these structures he regards as arising from the osteoblastoma and thus as logically participating in the primitive reversion that is one stage of bone repair. The attachments of ligaments and of tendons are loosened, pain and instability of joint movements result, swelling increases, and a vicious circle is set up.

In a properly treated fracture the period of disability is prolonged very little beyond the time required for bony union. Traumatic hyperæmia, essential in the initial stages, rapidly disappears as the limb is brought into activity. In the modern methods of splinting which allow use of the lower limb for support and of the hand for many of its normal duties, bone atrophy and prolonged swelling of joints are becoming rarer. Inadequate fixation or fixation for too short a period interferes with the resolution of the hyperæmia. The pain on attempted movement leads to spasm and increases the swelling; the X ray shows bone atrophy. Massage without resumption of function is very little good, and passive movements are probably always worse than useless. The patient remains off work for months, and everyone gets worried and impatient. Gurd quotes a case in which tuberculosis had been diagnosed in an ankle-joint which remained swollen long after injury. Histological examination was made to settle the dispute and the pathologist was able to demonstrate the existence of retrogressive changes in the joint tissues which had followed many months of disuse. In the treatment of these cases the two essentials are absolute fixation with complete relief of the insecurity and fear that pain engenders, and then use of the limb. The increased circulation needed by the muscles and joints is the best agent to counteract the hyperæmia, and recalcification of the bones will follow. The unpadded plaster cast is strongly advocated by Gurd, since padded casts gradually allow of small degrees of movement as they work loose. Dangling the limb as the patient walks on a crutch with an ununited fracture is particularly condemned.

ADRENALINE AND POST-OPERATIVE SHOCK

A SPECIAL number of a French weekly contemporary [1] records the work done on post-operative shock by Prof. O. Lambret and J. Driessens. Both in animals and man they found that trauma produces an immediate rise of blood pressure which is soon followed by a fall below the original level. The sudden rise is accompanied by an increase in the blood-sugar and a reduction of the liver glycogen (possibly already low from starvation) suggesting the action of adrenaline. Later, the blood volume, as measured by the congo-red method, falls and this is also ascribed to the action of adrenaline, which has been shown on injection to cause a fall of blood volume. Further, the blood *p*H, the alkali reserve, and the blood chlorides are all reduced and there is an accumulation of chlorides in the traumatised area. The blood-sugar level remains high for some time and this is thought to be due to proteolysis of the damaged tissues. These also give rise to an increase of the polypeptides of the blood, which is proportional to the extent of the injury and may be toxic. Occasionally the blood-urea is much raised, but the blood amino-acid level remains nearly constant. It is suggested that the injured tissues liberate their contents into the circulation where they act as an antigen and are digested very slowly. Hence the accumulation of polypeptides in the blood, their removal being hampered if the liver glycogen reserve is depleted. Leucocytosis, increase of platelets, and a raised erythrocyte sedimentation-rate occur after an operation and are also due to tissue destruction. In particular, a sudden increase in the sedimentation-rate may be characteristic of an impending pulmonary embolus, even 12 hours before it can be recognised clinically. Infra-red radiation was found to prevent

[1] Department of Scientific and Industrial Research. The Investigation of Atmospheric Pollution. 23rd Report. London: H.M. Stationery Office. Pp. 161. 7*s*. 6*d*.

[2] *Surg. Gynec. Obstet.* Feb. 15th, 1938, p. 489.

[1] *L'Écho Médical du Nord*, Jan. 31st, 1938.

the acidosis hypochloræmia and lowered alkali reserve; infra red also prevented the fall of blood volume.

If, the authors remark, the reduction of blood volume and the toxic absorption from the traumatised tissues could be prevented, the phenomena of shock would not develop. The former can be ascribed to an exaggerated defence mechanism by which an excess of adrenaline is released into the circulation. This could be countered by the intravenous injection of hypertonic solutions to check the loss of fluid into the tissues. The toxins from the injured area will be dealt with by the liver provided that its glycogen reserve is not seriously reduced; hence the reason for giving glucose and insulin. Both these indications would be met by the following programme:—

1. Immediately after operation 100 c.cm. of 30 per cent. glucose and 50 c.cm. of 20 per cent. saline are injected into a vein and 15 units of insulin are given subcutaneously.
2. One hour after the operation repeat the insulin.
3. Two hours after the operation repeat the insulin.
4. In the evening repeat the glucose, saline, and insulin injections. These may be repeated the following morning or subsequently if necessary.

The results of this routine treatment are stated to have been good, the clinical condition of patients so treated being obviously better than in others. Inasmuch as the unfavourable changes in the blood were largely prevented by this routine, the authors also recommend it for cases of traumatic shock and severe burns in which the blood changes are essentially similar.

POLICE TESTS FOR ALCOHOL

DRIVING a motor-car under the influence of alcohol is a crime in most countries, and many attempts have been made to correlate clinical drunkenness with the alcohol content of the blood, breath, and urine. Selesnick[1] prefers the determination of blood alcohol because blood contains a negligibly small amount of non-alcoholic oxidisable material, because its alcoholic content represents the degree of alcohol saturation at the moment the sample is obtained, because it is always available, and because it can be extracted from a passive person. An alternative is offered by Harger, Lamb, and Hulpieu,[2] who describe a rapid chemical test of expired air to determine its alcohol content. They use a 55 per cent. solution of sulphuric acid containing a small measured amount of permanganate of potash. The salt, they say, reacts rapidly and quantitatively with alcohol at ordinary temperatures, and is not affected by acetone. They measure the concentration of alcohol by determining the ratio of the alcohol to the carbon dioxide: 190 mg. of carbon dioxide is equivalent to 1 c.cm. of blood. The subject need not be touched, but a tube is held in the breath-stream and a pump draws the sample through the apparatus. Harger and his colleagues tested 121 persons and demonstrated a good correlation between the blood alcohol and the breath alcohol. The difficulty in using these tests to answer the legal question whether a motorist was so far under the influence of alcohol as to be incapable of controlling a car has lately been indicated by Mr. Justice Humphreys in a presidential address to the Medico-Legal Society.[3] While, he said, the evidence of a considerable alcohol content in the blood of a person who claimed to be a teetotaller might be of value, the test would be of little use, and might be highly prejudicial, when the accused admitted having taken drink. The law wishes to know not that the accused has consumed alcohol but the effect on him of the alcohol consumed. One man can take without apparent effect five or six times as much alcohol as another. He suggested also that factors other than the blood content will determine the effect of the alcohol upon a person: the temperature of the room, the habits of the drinker, the interval between drinks, and even the nature and quantity of the diluting medium. He thought it might be unsafe to produce evidence before a lay tribunal that the blood of the accused contained the equivalent, say, of half a bottle of whisky, for the man might have been perfectly sober even after drinking that quantity. These views, expressed by such a high authority on criminal law and practice, are important. Lawyers have by no means seen—and probably never will see—eye to eye with physiologists over the effect of alcohol on a driver. The physiologist is certain that even a small quantity—not enough to cause even the faintest perceptible signs—may make a dangerous difference in reaction-time and judgment, to say nothing of other faculties. The lawyer on the other hand is slow to believe that a motorist is incapable of having proper control unless there is also evidence of something like social drunkenness. The learned judge said frankly that the evidence he preferred on such a question was that of a superior police officer who had seen the accused at the time. A finding of no alcohol in the blood would, however, probably be conclusive evidence for the defence. Biochemical tests for alcoholism are therefore likely to remain more of a shield than a sword in English courts.

[1] Selesnick, S., *J. Amer. med. Ass.* March 12th, 1938, p. 775.
[2] Harger, Lamb, and Hulpieu, *Ibid*, p. 779.
[3] *Med.-leg. Rev.* January, 1938, p. 15.

PROGNOSIS IN CANCER OF THE KIDNEY

OF 105 consecutive cases of renal cancer reviewed by E. Ross Mintz[1] 72 were treated by nephrectomy, and the follow-up showed that 45 of these patients were dead and 22 living. Of the 22 who were still alive 7 had gone beyond the five-year period, 10 had passed the fourth year, and 5 were without clinical recurrence after three years. These figures make melancholy reading, and the high mortality-rate undoubtedly comes from inability to make an early diagnosis. The disease is by nature insidious, and often the patient first presents himself because of a metastasis, having had no urinary symptoms at all. Unfortunately, copious hæmaturia is by no means a common early sign, and pain is even less reliable as a symptom. Hopes have been entertained that post-operative irradiation might improve the prognosis, but it has not been proved to do so, and in the absence of confirmatory evidence a surgeon must feel some hesitation in prescribing a form of treatment which produces considerable reaction in an already debilitated patient. Mintz ends his review by saying that results will only improve when the diagnosis is made while the growth is still in its early stages. But how is this to be achieved?

[1] *New Engl. J. Med.* 1937, **217**, 1066.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.—A course for those engaged in the training of mental defectives in occupation centres, institutions, or mental hospitals, and for home teachers has been arranged by this association and will be held in London from July 4th to 23rd. Further information may be had from the educational secretary of the association, 24, Buckingham Palace-road, London, S.W.1.

CONTROL OF THE COMMON FEVERS

MEASLES

Reviewed by DR. WILLIAM GUNN, *Medical Superintendent, North-Western Fever Hospital, London County Council*

THE confident forecasts of epidemiologists regarding the biennial periodicity of measles are being upheld by current reports of outbreaks of the disease in various districts, and an increased incidence sometimes amounting to epidemic proportions, in areas where the disease usually remains endemic. While the expected London epidemic is later in making its appearance than usual, there has been in the last few weeks an increasing incidence of cases which suggests that the epidemic is approaching its peak. No exact figures are available since measles is not a compulsorily notifiable disease in the whole of London, but the number of cases reported from the London County Council elementary schools form a reliable guide as to prevalence generally; in the last four weeks * the weekly numbers so reported were 1551, 2165, 2521, and 2079. In addition, the number of patients admitted to the L.C.C. fever hospitals provide a guide of severity as well as of incidence, for only severe or complicated cases are deemed to require hospital treatment.

During the last four consecutive weeks * for which returns are available the average daily admissions to the London fever hospitals were 68, 86, 101, and 94. From various parts of the British Isles are arriving confirmatory reports of the steadily increasing prevalence of measles. In Glasgow the notifications for the last four consecutive weeks * were 1264, 1247, 1188, and 1037; the small weekly decreases indicate that the epidemic has probably passed its peak; in Edinburgh the recent notification figures suggest that the peak has also been reached, the numbers notified for the last four weeks * being 114, 66, 105, and 90, while in Aberdeen and Dundee small but increasing numbers are being reported. During the same period the notifications for the whole of Scotland were 1653 (22), 1747 (21), 1718 (16), 1547 (24); the figures in parentheses denote measles deaths in each week. Belfast has been visited for over two months by a severe epidemic which has taxed the resources of the hospital accommodation. In recent weeks the epidemic appears to be on the wane; the measles notifications in the last four consecutive weeks * have been 281, 217, 168, and 98.

Administrative Measures

The above returns provide ample evidence that measles is at present widespread in the British Isles; in the majority of areas the epidemic is in the early stages but in one or two centres it may have reached or have just passed its peak.

COMPULSORY NOTIFICATION

The serious gaps in our knowledge of the ætiology and dissemination of measles must raise anew the question whether notification should be adopted generally. A trial of compulsory notification in England and Wales was made in the years 1915–19 when the medical attendant was required to notify only the first case occurring in a household, the duty of notifying subsequent cases devolving upon the parents or householder. Since 1919 certain sanitary authorities have adopted compulsory notification for varying periods. Notification as at present applied is usually limited to the first case in a household occurring within two months—i.e., subsequent cases are notified only if they appear at an interval longer than two months after the first case, while in a few areas a further restriction is made by limiting notification to children under 5 years of age. In only one metropolitan borough (Fulham) are all cases of measles required to be notified.

Opinions vary on the merits and advantages of compulsory notification, and the disappointing experience of the 1915–19 experiment is usually cited, probably without adequate justification, as being a decisive reply to its advocates. At that time the public health services, particularly domiciliary supervision by health visitors and sanitary inspectors, were comparatively restricted and ill-organised, the available fever hospital accommodation was generally inadequate to cope with large numbers of admissions in a brief space of time, and the serum control of measles had not been introduced into this country. Furthermore, even prompt removal of cases to fever hospitals is unlikely to play any great part in reducing the incidence of the disease, as infectivity is highest in the early pre-eruptive stage when recognition is usually difficult and may be impossible. While the measles death-rate figures in the last quarter of a century have shown an appreciable decline, it would be difficult to attribute this trend to the effects of notification. In 1910 the measles death-rate per 1000 living was 0·44, and in 1920 0·22; in 1930 and 1931 the figures were 0·23 and 0·03 respectively; while in 1936 and 1937 they were 0·14 and 0·01. It is of moment to observe that only since the late war do alternate years show wide differences in fatality as well as in morbidity. The decline in mortality has been ascribed to the fall in the birth-rate, but this can at best provide only a partial explanation. Improvement in nutrition, lowered incidence of debilitating diseases such as rickets, tuberculosis, and the deficiency diseases, and a higher standard of hygiene have undoubtedly played an important part. Nevertheless, valuable epidemiological observations were made during the period while measles was notifiable in this country.

It was seen that the disease is most prevalent in temperate climates in the winter and spring months, being endemic in large centres of population and liable to explosive epidemics at approximately two-yearly intervals. Epidemics, however, tended to persist well into the summer months, when enteritis usually replaced broncho-pneumonia as the chief cause of death. Mortality was seen to be highest in April and lowest in September, and was higher in the North and Midlands than in the South, owing in all probability to the greater overcrowding and lower standard of living in the highly industrialised centres; cold and damp and unfavourable atmospheric conditions generally also exerted an unfavourable influence on the prognosis. The attack-rate was seen to be highest in the age-group 3–4, but fatality was greatest in the first year of life. Fatality was seen to remain high until the third year, when it fell steeply; in children of 5 or over, measles was shown to be a comparatively trivial disease. Case mortality tended to rise again after 15, and is very high—although the disease is rare—in old people.

The general inference to be drawn from these observations is that postponement of attack to the later age-groups is the most important single factor in the lowering of measles mortality, while reduction of the magnitude of epidemics and increased spread over a

* Ending March 19th.

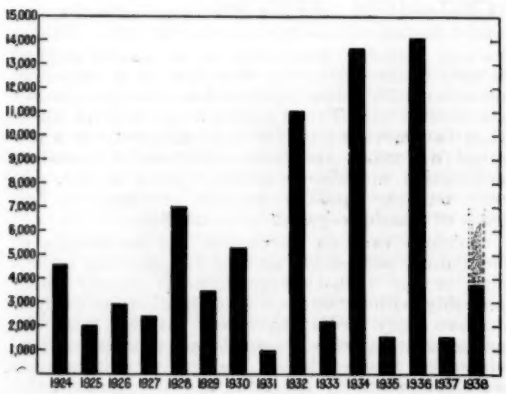

FIG. 1.—Annual measles admissions to London Fever Hospitals (M.A.B. and L.C.C.) 1924 to March 19th, 1938.

longer time are of somewhat less importance, although in practice these factors mutually support each other. Mere prolongation of an epidemic is advantageous in two directions: attack is deferred until the dangerous winter months are over, and medical and nursing services are enabled to cope with the cases as they occur, overcrowding in fever hospitals being avoided.

HOSPITALISATION

The admission of measles cases to hospital on a large scale is a post-war development that is being applied more and more during each successive epidemic. The yearly admissions to the London fever hospitals since 1924 illustrate this trend admirably and are shown on Fig. 1, though the biennial periodicity is somewhat obscured by the fact that yearly admissions have been recorded, while each epidemic period usually embraces part of two years. In the last three epidemics the numbers admitted are seen to have increased greatly, although it is probable that the total incidence of measles in London has shown little change from epidemic to epidemic. It may well be that the size of epidemics is diminishing. The increasing hospitalisation of measles cases suggests that public health authorities have decided that education of parents on elementary nursing and hygiene and the domiciliary supervision of cases by health visitors have to some extent failed of their purpose. The policy of increased hospitalisation of measles can only be justified if the available accommodation is reserved for potentially serious or complicated cases, but considerable difficulty must be expected in making a just selection of cases. One is not justified in ascribing the diminishing fatality-rate to the effects of hospital treatment, since measles mortality was seen to decline before the policy of hospitalisation was generally adopted. Nor can the fall in hospital fatality-rate be properly attributed to improved therapeutic measures and equipment available nowadays in hospitals. More probably the recent favourable results are due entirely to the fact that an increasing proportion of cases, many of them too mild to need hospital treatment, are in fact being admitted. The measles admissions figures for the London County Council hospitals over the period 1927–36 appear to bear this out. They are as follows:—

	1927–28	*1929–30*	*1931–32*	*1933–34*	*1935–36*
Admissions ..	8,729	6,452	11,526	12,896	13,156
Deaths ..	626	422	647	712	494
Case mortality	7%	6·5%	5·6%	5·5%	3·8%

The figures given for the first two epidemics relate to London County Council fever hospitals only; for the last three epidemics they embrace admissions to fever and general hospitals (L.C.C.).

Those who oppose the policy of large-scale hospitalisation of measles cases can generally quote

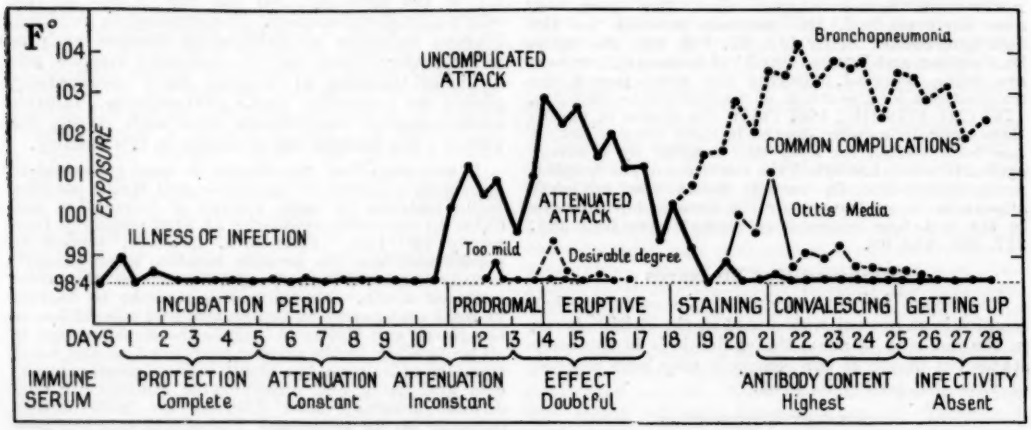

FIG. 2.—The effect of serum on the course of the attack in the London Measles Epidemic, 1935–36. The dosage of serum and the time-table of its administration are as follows:—

Nature of serum.	Dose in c.cm.	Dosage factor.	Route.	Prophylaxis.		Treatment.
				Protection.	Attenuation.	
Convalescent ..	5–20.	Age × 2.	Intramuscular.	1st–5th day.	5th–9th day.	Within 6 days of onset. Dosage factor: age × 4. Route: intravenous.
Normal adult ..	10–40.	Age × 4.	Intramuscular.	1st–3rd day.	3rd–9th day.	
Whole blood ..	Double its serum.	Age × 4.	Intramuscular.	1st–3rd day.	3rd–9th day.	
Placental extract	7·5–30.	Age × 3.	Intramuscular.	1st–3rd day.	3rd–9th day.	—

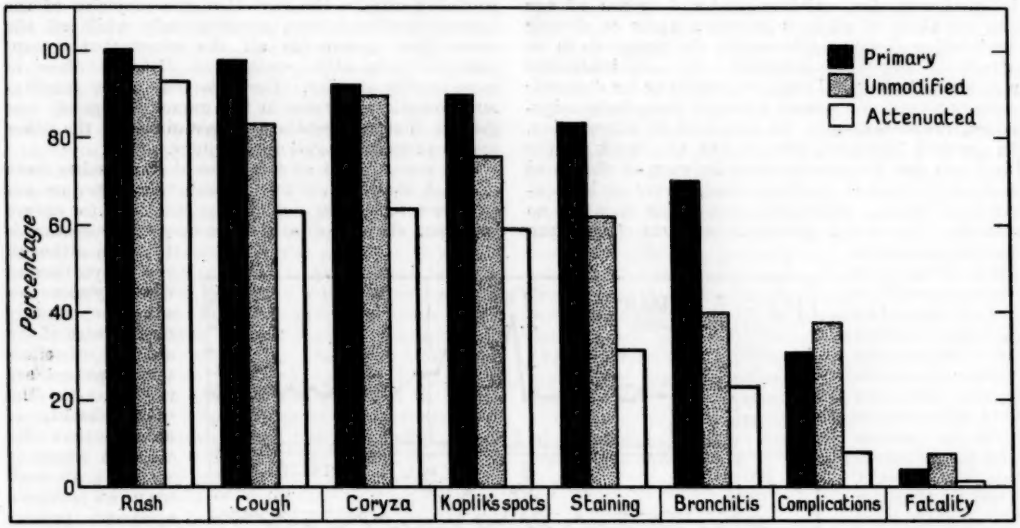

FIG. 3.—Frequency of initial and main manifestations, complications, and fatality-rate in measles in (*a*) primary infecting case (controls), (*b*) unmodified, and (*c*) attenuated attacks.

statistics which prove that both complications and fatality-rates are higher amongst hospital cases than amongst home-nursed cases. They are merely proving that hospitals are places in which deaths are more frequent than in private houses, which is only to be expected inasmuch as patients are usually sent to hospital when there is a definite threat to life. No figures are available that could rightly be employed to effect a direct comparison between hospital and home-nursed cases. The untoward effects of hospitalisation of measles are those that are incidental to the close aggregation of large numbers of susceptible individuals, no matter what the reason for which hospital admittance is sought. The chief objection—the liability to other infectious diseases or to infectious complications such as upper respiratory infections and enteritis—is now being removed as increased individual isolation accommodation is being provided at the fever hospitals. Likewise, the unfavourable psychological effects of segregation on certain young children may be avoided by the use of glass partition cells and by cutting down the period of isolation to a minimum.

Treatment

Probably the necessity of providing the facilities of hospital care would be abolished if a specific remedy were available, simple and safe enough to be used in the home. Unfortunately no sovereign remedy has as yet been discovered; indeed the measures which have been found of most benefit are elaborate and expensive or require special experience to apply successfully. Pyramidon and, more recently, sulphanilamide have roused enthusiastic hopes, but experience has shown both drugs to be of little therapeutic value and not devoid of danger if pushed too far. Immune measles serum, preferably convalescent serum, has been given in treatment in doses of 10–50 c.cm., by the intramuscular or intravenous route, to selected cases in the pre-eruptive and early eruptive stages; some few appear to have benefited but the results have never been dramatic and are usually disappointing. Such improvement as has been observed is possibly attributable to complement and allied bodies, or even to streptococcal antitoxin, in the serum rather than to a specific anti-measles action. Antiscarlet fever serum is frequently given in hospital practice by the intramuscular route in doses of 10–30 c.cm. when septic complications threaten, since hæmolytic streptococci are by far the commonest secondary invaders in measles. Pneumococci and the Pfeiffer's bacillus are less frequently found, but no serum of proved value is available for combating their invasive properties. In like manner, antidiphtheritic serum has proved of value in diphtheria prophylaxis because the mucous membranes damaged by measles are particularly prone to infection by diphtheria organisms.

Prophylaxis

ISOLATION

Attempts to avert measles epidemics or even to alter their trend appreciably by isolation measures alone have proved useless. This failure is attributable chiefly to the high infectivity and dispersibility of the disease as well as to the great susceptibility of those who have not undergone attack. A small proportion appears to escape by virtue of partial and usually temporary immunisation through subclinical infection, but these cases do not materially affect the general character of the disease, whether in individuals or in the herd. Other means, therefore, have to be sought to protect the individual at a time when a measles attack might be dangerous to life or so to modify the nature of the attack as to render it innocuous.

SERUM PROPHYLAXIS

The control of measles in individuals or groups of individuals is most easily effected by the administration of immune measles serum. According to the type and dose of serum and the interval elapsing between exposure and the time of injection, either complete protection, which lasts from 14 to 21 days, or modification of attack, which appears to confer lifelong immunity, can be secured. Complete protection

is preferred for children under 3 years of age and for those of all ages in whom acute or chronic debilitating disease might render the prognosis in an attack of any kind doubtful. For administrative reasons, as in hospital ward outbreaks or for domestic reasons to prevent spread amongst immediate neighbours, prevention may be preferred to attenuation. In general, however, attenuation of attack is the ideal aim and fortunately may be secured almost as easily by means of adult (normal) serum as by convalescent serum, although in protection it is not so reliable. Recently, placental extracts (McKhann and his co-workers 1933, 1935) have been prepared by extracting the globulin fraction from human placentas; these substances have been used with success both for protection and attenuation, but generally speaking they are only slightly more effective than adult serum. Moreover, the severe local and constitutional reactions that may be produced in some individuals, lasting from 12 to 36 hours, are a serious objection to their unrestricted use. The different kinds of immune sera and blood available and the conditions of their successful administration are shown in Fig. 2.

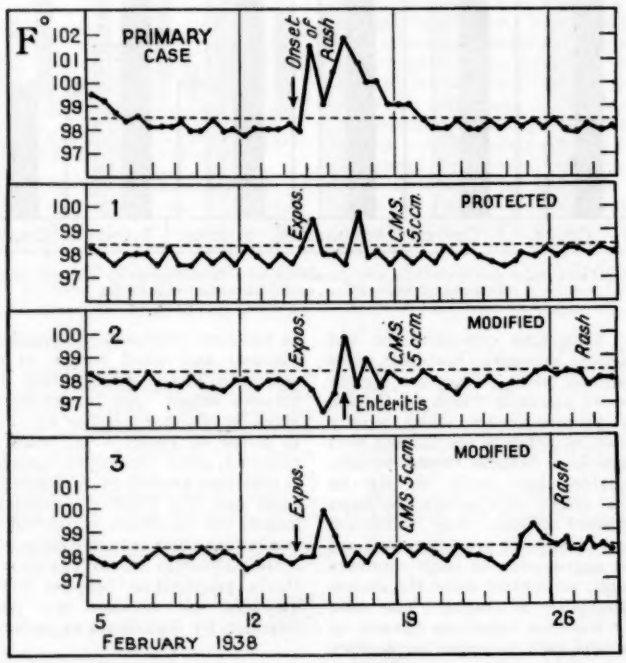

FIG. 4.—Introduction of measles into whooping-cough ward; among 16 non-immune contacts three showed the "illness of infection." One of the inoculated was apparently protected by serum, while the remaining two had markedly modified attacks, showing less fever and constitutional disturbance than the illness of infection. Expos = date of exposure to infection. C.M.S. = convalescent measles serum.

Immune measles sera of whatever kind and however prepared are difficult to assess as regards potency. Placental extracts are usually standardised by estimating the amount of protein they contain; this method can form only an approximate guide to their antibody content. Occasionally the Debré phenomenon (rash inhibition) may be available as an index to potency, but in actual practice clinical trial of an unknown serum remains the most reliable method of biological assay. Too often all the serum belonging to one batch has been already injected before a decision as to its potency is possible. Since controls of protective experiments are rarely available nowadays because every known contact receives the benefit of immune serum, reliance is usually placed on attenuation experiments for testing serum potency. A comparison is best effected by comparing the frequency of the initial and main manifestations of measles and the complication and fatality-rates which follow in those who have been injected with those from whom serum has been withheld.

It is seen in Fig. 3 that the unmodified group fared even worse than the controls (uninjected); this is probably due to the fact that the majority of the controls suffered from measles only while all the unmodified group (as all the attenuated group) suffered from other concurrent diseases, often of considerable gravity. For this reason the fatality- and complication-rates in the unmodified group was greater than among the controls although the other measles manifestations were milder.

The worst defect of serum prophylaxis arises from the fact that we cannot be certain whether or not exposure has been sufficiently intimate to ensure invasion. This is of no great moment if protection is the aim, although the proportion of resulting successes may be unduly exaggerated if the chances of effective exposure are remote. On the other hand, if attenuation be the aim serum is wasted if through non-exposure apparent protection has followed inoculation. Although the incubatory stage is usually described as a "silent" period, three phenomena may be observed which, singly or combined, may assist in deciding whether invasion has taken place. At the time of exposure a febrile disturbance with coryzal symptoms, and occasionally a transient face rash, occur in a small proportion of cases. Goodall (1925), who first described the condition, was inclined to consider the reaction a miniature attack of measles, but this is unlikely since attacks of normal severity invariably follow at the end of the normal incubatory period. Meunier (1898) described a loss of weight amounting to 4 or 5 oz. in young contacts on the 5th to 8th day of the incubatory period, but the phenomenon is too inconstant to merit reliance. More valuable is the blood picture; a polymorphonuclear leucocytosis appears about the 5th day and alters to leucopenia just before the onset of the rash, but the appearance of the blood changes may be prevented by the use of immune serum or the presence of antecedent disease with characteristic blood changes, such as those seen in whooping-cough, may obscure changes arising from measles. The temperature charts of the primary infecting case and three contacts who showed Goodall's sign, two of whom subsequently developed serum-attenuated measles in a recent ward outbreak, involving in all sixteen non-immunes, is shown in Fig. 4.

The difficulties and uncertainties encountered in the application of the serum prophylaxis of measles are great but need not be unsurmountable. The disease should be prevented or postponed in the young and sickly, but in healthy children of over 3 years of age deliberate exposure followed by injection of serum of known potency is a simple and justifiable procedure. The majority of experiments in which the method has been employed have met with complete success. More difficulty is felt in securing supplies of serum at short notice. At present stocks of varying amounts, chiefly of adult serum, are held by the public health authorities of the principal cities and towns of this country; the majority have found it convenient to enlist the aid of a laboratory specially equipped for the work of preparing sera. The Wellcome Research Physiological Laboratories, Beckenham, have undertaken this work and other makers of biological products, such as Evans Sons Lescher and Webb Ltd., are also prepared to do the same work. The largest stock of immune serum in this country (convalescent, normal adult, and placental extract) is held by the L.C.C. for use in their hospitals and institutions, but few requests for supplies are refused if made by or through local medical officers of health. To avoid the serious loss of potency amounting to 25 to 50 per cent. in one to two years, which serum suffers from ageing, large stocks are being dried by this authority, in which state they appear to retain their potency indefinitely. Placental extracts (Lederle's immune globulin) are marketed in this country by Messrs. Chas. F. Thackray of Leeds.

ACTIVE IMMUNISATION

The ease and comparative success that has attended the use of immune serum has diverted the attention of workers in this field from the earlier attempts of those who regarded some form of active immunisation as the ideal measure in measles control. As long ago as 1759 Home of Edinburgh claimed to have successfully vaccinated by scarification non-immunes with infective blood taken from measles patients in the early stages of the disease, but subsequent workers failed to confirm his observations. More positive success attended the experiments of Hermann (1914), who instilled successive daily doses of filtered naso-pharyngeal washings from measles subjects into the nares of 3–5-months-old infants in the hope of maintaining or enhancing their temporary immunity obtained by the placental circulation. The occasional occurrence of serious accidents such as attacks of unmodified severity—since it is impossible to predict exactly when an infant will lose its immunity—was responsible for the method rapidly falling into disrepute. In 1918 Nicolle and Conseil followed inoculation of convalescent serum by 1 c.cm. of blood recently withdrawn from patients in the pre-eruptive stage of measles and in the following year Richardson and Connor supplemented Hermann's technique by the addition of convalescent serum. All these procedures proved either too dangerous or too unreliable for clinical practice, but some modification or refinement of technique may well lead to success, which the limitations inherent in serum prophylaxis forbid.

I desire to thank Dr. J. A. H. Brincker, principal medical officer of the public health department, London County Council, for his advice and his coöperation in placing at my disposal much of the statistical material in this article.

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SPECIAL ARTICLES

ANÆSTHETICS BY MIDWIVES

THE administration of anæsthetics by midwives is still in the experimental stage and a number of points must yet be settled before a satisfactory degree of anæsthesia is available to every mother. The Central Midwives Board, who are morally if not legally responsible for such anæsthetics, were advised in the first place by the British College of Obstetricians and Gynæcologists, and no doubt feel that until they have had more experience they must be guided by the rather cautious advice of that body. Criticism of the scheme has so far been levelled entirely at its inadequacy; there appear to have been no suggestions that it is unsafe. The rules of the Central Midwives Board, as stated in their report for 1937,[1] allow the midwife to administer gas-and-air by "Minnitt's or similar apparatus" provided she has received special instruction and been found proficient in the use of the apparatus; provided the patient has been examined by a doctor within one month of her confinement and certified fit for gas-and-air administration; and provided one other person (being a certified midwife, a registered nurse, a senior medical student, or a pupil midwife) is present.

A committee of experts have drawn up the following schedule of the requirements of an apparatus if it is to be regarded as similar in all essentials to Minnitt's apparatus:—

1. It must be capable of delivering only nitrous oxide and air when nitrous oxide cylinders are attached to it.
2. It must be so arranged that the proportion of nitrous oxide and air cannot be altered by the midwife.
3. The proportion of air delivered by the apparatus must be not less than 55 per cent. when the apparatus is tested under the following conditions—viz., at a temperature of 65° F., the mixture being delivered through a corrugated tube with an effective diameter of ¾ in. at a pressure equal to that of normal inspiration—i.e., 1½ in. of water.
4. It must not permit rebreathing.
5. It must have an efficient reducing valve.
6. It must have an efficient intermittent flow device.
7. The air inlet must be so arranged that it is not possible accidentally to occlude the air holes.

With regard to the clause which limits the strength of gas to 45 per cent., John Elam[2] has found that

[1] Report of the Central Midwives Board for 1937. London: H.M. Stationery Office. Pp. 19. 4d.

[2] *Lancet*, March 5th, p. 578.

this proportion is too weak to give an adequate analgesia, and he favours fixing the strength of gas instead at 60 per cent. "I am quite sure," he says, "that no ill effects can result from using a mixture of this strength. To persevere with the fixed 45 per cent. is going to lead to a large number of failures." He quotes [3] 1500 cases which have received about 60 per cent. gas at the Wellhouse Hospital, Barnet, with one death from post-partum hæmorrhage. Of the 880 primiparæ in this series, 541 experienced no pain after gas-and-air was started; 331 found great relief; and only 8 expressed themselves as disappointed. Of the 620 multiparæ, 332 had no pain, 280 reported great relief, and again only 8 were disappointed. It seems then that 60 per cent. of gas gives a highly satisfactory degree of analgesia. Chassar Moir,[4] however, maintains that until Elam's claim is supported by strong evidence, a prolonged reduction of oxygen intake from 20 per cent. (as in normal air) to 8 per cent. must be regarded as a serious matter. The resulting anoxæmia, he says, can scarcely be beneficial to the mother, and if it is maintained during the actual delivery must surely be prejudicial to the safety of the fœtus. In his view a more satisfactory analgesia with equal safety is obtainable from an apparatus delivering pure gas, with a device preventing the inhalation of more than 110 ounces of gas (2 to 3 breaths) at one time. R. J. Minnitt, on the other hand, has found that inadequate analgesia with an apparatus conforming to the Board's requirements has resulted only where some error of technique has been committed by an attendant not thoroughly conversant with the method.

The cost of gas-and-air anæsthesia is not great. Four types of apparatus have so far been approved by the Board ranging in price from 8 to 16 guineas, and the cost of the gas itself would not exceed 2*s.* 6*d.* for an average confinement. It appears to be the opinion of practising midwives that although with the present fixed percentage of 45 per cent. gas an optimum anæsthesia is not practicable, the relief provided, aided by a certain psychological effect, is sufficiently great to be worth while.

As with any other semi-automatic anæsthetic apparatus, the administrator of gas-and-air must clearly be thoroughly familiar with the method and must pay careful attention to its details. Before allowing a midwife to give an anæsthetic the Central Midwives Board require her to attend two lecture-demonstrations by a specialist anæsthetist, to administer gas-and-air under supervision to at least 20 patients, and to obtain from the institution at which she has trained a certificate of proficiency. The Board do not, therefore, themselves examine or certify the proficiency of midwives, but limit themselves to approving the institutions which are allowed to do so. A midwife in private practice may, in the ordinary way, obtain a certificate of proficiency after a fortnight's course, and in Minnitt's opinion this should ensure that patients receive the best available relief. A certain degree of skill and willing coöperation are also required of the patient. As some 21 to 24 seconds elapse between the first inhalation of the mixture and satisfactory analgesia she must begin to inhale at the slightest indication of a pain, and she is the only one who can tell when a pain is coming. In the bearing-down stage she must take five or six breaths of gas and then hold her breath and push. It is obviously impossible to explain complicated manœuvres of this sort to a flustered and probably frightened woman in severe pain, so that instruction in the method should be part of routine antenatal care during the last month of pregnancy.

The regulation that a qualified or partially qualified person must be present with the midwife during the administration, though simple in an institution, is a serious limitation in private practice. The essential duties of such a person are presumably to pick up the mask if it falls on the floor and to hold it on the patient's face during the final stages of delivery, and such assistance should not be beyond the power of any untrained woman of average intelligence. At present, since students are rare outside hospitals, this regulation entails the attendance of an additional qualified midwife or nurse and almost prohibits the use of anæsthesia where expense has to be considered.

[3] *Practitioner*, March, 1938, p. 249.
[4] *Lancet*, March 12th, p. 634.

MEDICINE AND THE LAW

Dispute over Hospital Guarantee

THE Ilford county court on March 14th began the hearing of a claim by the King George Hospital against Mr. Harold Meech, which raised an interesting question of the duration of a guarantee. The defendant's son was admitted into a private ward on July 24th, 1935, suffering from what was discovered to be Hodgkin's disease from which he ultimately died. Three days after the son's admission the father signed the usual form of guarantee at the request of the hospital. The boy remained in the private ward till the last week in August when he went home. There was at this time, apparently, an idea that he might receive his treatment as an out-patient. But on Sept. 9th it was found necessary to send him back to the hospital. Mrs. Meech, his mother, seems to have been told that on this second admission he could go into the general ward; she wished him, however, to go into a private ward. The payments for the first period of treatment were made either by Mr. Meech or Mrs. Meech. All the weekly accounts and receipts were sent to Mr. Meech. The hospital contended that, in the absence of any express statement to the contrary, the guarantee continued to run in respect of the second period; the defendant contended that it was terminated when the patient left the hospital in August and could not be automatically revived on the second admission in September. The judge reserved judgment.

Legacy to Charity with Impossible Condition

In re Hovenden is a case in which the court managed to uphold a charitable bequest in the face of difficulties. Mr. Hovenden left £1000 each to the Royal Hospital and Home for Incurables and to the National Benevolent Institution. The governors of these two bodies were to invest the money and use the income "to provide some form of amusement to be settled by a committee of five of the patients of each of the said institutions." There was no trouble about the bequest to the Royal Hospital and Home for Incurables; it had resident "patients" and was willing to accept the legacy and carry out Mr. Hovenden's wishes. But the National Benevolent Institution possessed no hospital or almshouse. It was a voting charity; it provided small pensions for aged and reduced members of the upper and middle classes of society; its pensioners lived in their own homes and could not be described as "patients." The treasurer, who stated these facts in an affidavit, explained that

the institution was not in a position to carry Mr. Hovenden's directions into effect. Mr. Justice Simonds found himself able to construe the gift as one indicating a general charitable intention to which was added a particular intention which could not be carried out. The gift, he said, would prevail although the condition could not be fulfilled. The legacy would go to the National Benevolent Institution which would not be put upon terms as to the disposal of the money.

A Question of "Sound Disposing Mind"

After a prolonged hearing Mr. Justice Henn Collins has given judgment for the disputed will in North *v.* North. The late General North made his will on March 13th, 1936. His two brothers propounded it for probate, but his son challenged it on the ground that the testator was not of sound mind, memory, and understanding at the time and did not know and approve the contents of the document. He said that General North had a cerebral attack in July, 1935, and thereafter suffered from delusions and formed an unreasonable hostility towards his son. Medical witnesses were called by both sides. Dr. R. G. Mathews of Kirkby Lonsdale, who had attended the North family for many years, said that on March 17th, 1936 (four days after the date of the will), he found General North in a confused mental state, acting in a childish manner and giving the impression that he was not clear in his mind. The witness diagnosed cerebral thromboses and considered that these were the cause of the testator's death three months later. His conversation was abnormal; he thought he was back in his soldiering days; he confused Hitler and Mussolini and he forgot what room he was in. Dr. J. G. Porter Phillips, on the other hand, thought that the evidence suggested that the general's condition in July, 1935, was due to heat and fatigue in an elderly man possibly suffering from arterio-sclerosis. If there had been a thrombosis on this occasion, it must have been a very slight one. Persons suffering from cerebral thrombosis were able to pull themselves together and focus their attention on what they were doing. Dr. R. D. Gillespie said the various symptoms described indicated brain disorder. In reply to the judge, he said he would not himself have witnessed the will on March 13th; he thought the general might have formed a warped judgment and yet have understood what he was carrying out. The judge, evidently impressed by the testimony of the solicitor as to the condition of General North at the time of the making of the will, came to the conclusion that the testator knew and approved the contents of the document; he had shown considerable acumen in discussing the will and had given his attention to the matter for a full hour, dealing lucidly with any questions put to him. The general had made no provision for his son because he was already provided for. His son put this forward as an insane delusion. But there was justification for the general's view other than the influence of mental disease; he had held this view as long ago as 1931. There was enough to account for the testator's dispositions apart from their being due to disease. During the first three months of 1936 the deceased had suffered from some condition which affected the normal supply of blood to the brain; but the disease had not so far advanced as to cloud his judgment. The court held that General North was of sound disposing mind when he executed the will in March, 1936. Probate was decreed of that will, with an order that each side should pay its own costs.

RHEUMATISM AND HYDROLOGY

INTERNATIONAL CONGRESS AT OXFORD

ELEVEN countries were represented at the International Congress on Rheumatism and Hydrology which opened in London on March 25th with a Government reception at Lancaster House, where the guests were received by Sir KINGSLEY WOOD, the Minister of Health. On Saturday visits were paid to hospitals and institutions in and around London, and in the evening Lord DAWSON received the delegates in academic dress at the Royal College of Physicians.

The first group of discussions was taken at Oxford in the first half of the present week. In formally opening the session, in the Sheldonian theatre, Sir FARQUHAR BUZZARD expressed his hope that money might be forthcoming to establish rheumatism centres where the statistician, the social worker, the clinician, and the pathologist could work together under the guidance of an expert in preventive medicine. Money so invested would, he felt sure, show a good return. The two main subjects of debate at the meetings were the effect of wet and dry climates and weather on the causation of disease, and juvenile rheumatism in its various aspects. A few extracts follow from the numerous papers contributed to these subjects. On Thursday afternoon the congress adjourned to Bath where Lord HORDER was to preside at the opening of a conference on Gout and Rheumatism of Metabolic Origin.

Climate in the Causation of Disease

Dr. G. EDSTRÖM (Lund) said that the most important feature of a climate was its lability, its abundance of cyclones and anticyclones. No direct parallelism had been established between meteorological factors such as atmospheric pressure, temperature, humidity, and cooling factor, and the general death-rate or the incidence of certain diseases. Pulmonary tuberculosis, rheumatic fever, heart diseases, and acute lung diseases varied in different seasons and localities but gave no positive correlation with climatic conditions. He had himself been unable to reveal any correlation between the frequency of rheumatic fever and the absolute or relative humidity or the rainfall. Relatively high humidity and relatively high rainfall however generally accompanied great variability of climate and this association was likely to underlie the instances of correlation between humidity and disease. In Europe the highest number of people above 80 years of age were found in Sweden, Norway, Eire, and the Faroe Islands, countries with the most variable, biologically oppressive climate. The electrical factors of the atmosphere were, he thought, important—for one reason they were exerted at a distance and juncture when other climatic elements were still unchanged; pain felt in scars usually arose before barometric changes were recorded.

Prof. B. DE RUDDER (Frankfort-on-Maine) also spoke of the group of phenomena related to the passage of air masses, the alternation of cyclones and anticyclones, and their lines of aerosol interface. He thought that the exciting cause of disease from these conditions had not so far been determined though it was almost certainly not one of the meteorological elements which could be isolated and measured at present.

Dr. E. P. POULTON (London) said that fluid loss from the skin was two or three times greater than

that from the lungs at 68° F. and as much as ten times as great at 86° F. Alveolar air was little short of saturation with aqueous vapour and so the amount of water excreted from the lungs depended on the difference between the humidity of the atmosphere and saturation point at blood heat. At ordinary temperatures, however, the loss from the skin depended on the difference between full saturation of the surrounding air at room temperature and the actual vapour pressure—a figure known as saturation deficiency. Absolute and not relative humidity was thus the important factor and he had therefore plotted average monthly values for humidity against temperature on a diagram which also showed the relation of the aqueous vapour in saturated air to the temperature; the graphs provided a measure of climate which was easier to assess than relative humidity. In this way he had obtained striking curves for Great Britain, India, and neighbouring places. Though the stations had their characteristic curves they could be divided into types, depending on proximity to the sea and altitude, while the effect of profuse rain in raising humidity but lowering the temperature was shown particularly well at inland stations such as Agra. A comparison of climatic conditions in areas reputed to be beneficial for the tuberculous with the conditions in other areas suggested that dryness of climate might be an agent against tuberculosis. The conditions in Davos for instance differed little from those of England except in temperature, altitude, freedom from dust, electrical changes, and humidity. The temperature was unlikely to have much effect as patients were usually kept indoors when it was cold. He had been so struck with the possibility that dryness had therapeutic value that he had evolved a tent for treating tuberculosis, but it was as yet too early for clear-cut results.

Juvenile Rheumatism

PATHOLOGICAL ASPECT

Dr. A. G. GIBSON (Oxford) defined the disease he was describing as one of any child or adolescent suffering from pain in the limbs not due to debility, uncorrected orthopædic conditions, tuberculous and syphilitic arthritis, and the acute staphylococcal bone diseases. The factors of cold and damp in its determination were, he said, beyond question. The disease occurred commonly in the first cold spell of autumn, was associated with damp houses, was more prevalent in wet climates than in dry, and was more prevalent in the parts of a town near a river than in those remote. It was one of the diseases of childhood in which the patient had to be protected from chill. It was prevalent too with certain families and in its incidence followed acute infections, especially those due to the streptococcus which also precipitated relapses. The primary streptococcal infection was most commonly in the upper respiratory tract, a silent period of 7–21 days then followed, after which the true manifestations appeared. The morbid appearances, especially in the heart, approximate to those of tubercle rather than those of a streptococcal infection, and though streptococci could be found on the surface of the cardiac lesion, they were rare in the connective tissue and capillaries. The frequency, however, of the anatomical cardiac signs of rheumatism suggested that the main ætiological factor was very common. The blood picture and sedimentation-rate and other features in the later phases favoured rather a coccal ætiology than a virus. Many workers had shown the intimate relation of some form of streptococcus to several different lesions—such as pericarditis, arthritis, and even chorea, but the large number of negative findings threw doubt on the observations. Treatment by streptococcal vaccines, protein shock, and intravenous flavine seemed to have no great value, though antistreptococcal serum had been used with benefit. According to the definition of allergy used in Great Britain, rheumatism was not an allergic disease. The term, however, as defined for instance by Aschoff, included both reactions to infections and "attack" diseases, the sense in which British writers used the term. There would appear to be no doubt that some factor, so far obscure, which to some was a form of allergy, to others explained by some local or general factor inherited or acquired. It might also be looked on as a tertiary phenomenon of a streptococcal infection on the analogy of syphilis.

Prof. F. KLINGE (Münster) said that, as in later years, rheumatic fever in childhood was definitely a generalised disease, but it attacked principally the locomotor apparatus and internal organs. Visceral rheumatism, a progressive form typical of early years of life, was characterised by remarkably serious and widespread rheumatic damage. Its medical importance lay in the scarring and sclerosis which endured through life.

CLINICAL ASPECT

Dr. LEONARD FINDLAY (London) held the view that the solution of the problem of the disease awaited the discovery of the cause. Without that a specific diagnostic test could not be expected and treatment must perforce be empirical. It was imperative to encourage research into the cause to the full, and he thought it should be limited in the first instance to study of those manifestations about which there was general agreement and probability of relationship. At the present moment the only conditions which could be accepted as probable manifestations of the rheumatic infection were, in order of importance, arthritis, carditis, chorea, the subcutaneous nodule, and erythema circinata. But none of these was pathognomonic and each of them could be, and was with varying frequency, caused by some other infection. A decade ago the tendency had been to treat all indefinite pains as rheumatic, but thanks to experience gained in rheumatic clinics mere debility or some orthopædic lesion was recognised as the usual explanation of the symptom. Such cases if followed up were seldom if ever seen to develop carditis. The selective action of a toxin for a particular tissue was one of the most interesting phenomena in biology; it was remarkable that the pleura, separated from the pericardium by the merest film of areolar tissue and homologous with it, should not invariably suffer when pericarditis was present. Dr. Findlay did not believe that pleural, meningeal, pulmonary, and peritoneal infections ever had a rheumatic basis. In every instance he had investigated the pleural effusion in acute rheumatism had been passive. The presence of an Aschoff nodule had been taken as proof of the rheumatic nature of some cases of pneumonia, but giant-cell formation was characteristic of healing wounds and was not infrequently observed in chronic broncho-pneumonia of childhood. Any naked-eye or histological evidence of peritonitis was restricted to the neighbourhood of the diaphragm in cases of chronic pericarditis and was quite different from a primary and acute infection. In his experience severe abdominal pain in the rheumatic patient had been due to either referred pain from the pericarditis or to an underlying arthritis of the hip, which if right-sided might be mistaken

for appendicitis. Meningitis as a manifestation was a survival of pre-bacteriology days when suppurative arthritis was taken for acute rheumatic fever. Dr. Findlay did not think that headache and delirium and even some stiffness of the neck warranted a diagnosis of meningitis; this was only justified by some abnormality, other than raised pressure, of the cerebro-spinal fluid. In no recorded case had the findings given proof of meningitis.

Dr. H. GRENET (France) pointed out that the gravity of rheumatic fever was much greater in children than in adults, and he thought this might be due to particularly favourable soil on the one hand or partial immunisation on the other. In France 2–4·5 per cent. of the children admitted to hospital for medical conditions suffered from rheumatism. He had found that the first attack was commonest between the ages of 8 and 14 years, the youngest among his cases being only 2. He had been unable to note any greater liability to infection of one sex. He maintained that the disease might also manifest complications involving lungs, pleuræ, digestive system, and kidneys. Fever was only of secondary importance, the disease being progressive sometimes when the temperature fell. Cardiac lesions were of course most important, occurring in 72 per cent. of his cases and being permanent in 65 per cent. of them. The mortality among all cases in hospital in ten years had been 17·4 per cent., and the prognosis for juvenile rheumatism was on the whole unfavourable.

SOCIAL ASPECT

Dr. F. J. POYNTON (Bath) said that on account of its consequences and its frequency juvenile rheumatism was a serious disease. The Ministry of Health in 1927 had estimated 35,000 children in England and Wales with rheumatic heart disease. The maximum age of incidence was between 7 and 10 years and its frequency under 5 years was underrated in this country; the frequent occurrence under 12 years should, he said, be burnt into the consciousness of all doctors. Although there were no statistics to show the incidence among the well-to-do and poor he held that it was on the whole relatively greater among the poor. It certainly was not confined to those within the complex of poverty, and he concluded therefore that infection and climate played their part. In his figures which had accumulated since last century he had found a definite familial history in 40 per cent. Turning to the conditions which favoured the disease among the poor, he spoke of the damp, overcrowding, mal-sanitation, undernutrition, and other faults which made up their "micro-climate." In Great Britain those interested in every form of rheumatism would never again have such an opportunity of studying micro-climate in relation to juvenile rheumatism, for already over 3 million new houses had been built, and if they were good houses (and if housing was related to the disease) there would be a fall in the incidence. Unfortunately it had been estimated that 10 per cent. of the new houses were bad and 20 per cent. doubtful. He hoped that in the future the special risks of rheumatic children—nervous overstrain, sudden chilling in swimming-pools, over-exertion in physical culture, and more especially lack of after-care in convalescence—would receive attention.

Dr. WILFRID SHELDON (London) read a paper on the therapeutic aspect of juvenile rheumatism which appears in full on p. 767.

PARIS

(FROM OUR OWN CORRESPONDENT)

REGULATION OF THE SALE OF FRUIT JUICES

WITH the growing consumption of non-alcoholic beverages made from fruit it has become more and more desirable that legal safeguards should be adopted on behalf of the consumer. The French syndicate formed by the makers of these fruit juices has recently consulted the Academy of Medicine about the framing of such legislation. Discussions within the Academy have done much to clear the air and guide the prospective legislator in this matter. It was generally agreed that no chemicals, but only such physical means as pasteurisation, refrigeration, filtration, &c., should be employed for the preservation of these drinks. It was held that even apparently harmless additions like colouring agents and perfumes should be taboo. On the other hand sugar in the form of saccharose may be added to correct excessive acidity and any tannin there might be present. Other recommendations, endorsed by the Academy, concerned nomenclature when the juice of more than one fruit is sold in the same bottle or when the juice has been in some way or other concentrated and "reconstituted." Vendors should also put a label on every bottle telling the consumer to empty it there and then. What was, perhaps, the most important expression of opinion in this connexion was the hearty damnation of any kind of chemical preservative, even the sulphur compounds hitherto presumed to be guileless.

HEALTH PASSPORTS

What may prove to be the thin end of a wedge driving the health passport into the community as a whole is a system recently adopted on behalf of delinquent children given the hospitality of certain correctional institutions. According to this system, a record is to be compiled for each of these children, giving the pertinent facts about delinquencies, family antecedents, the findings of physical and mental examinations, pathological "incidents," and professional aptitudes with a view to future employment. The compilation of this record is to be continued till the child attains his majority. It is expected that this system will soon be extended to all the children in the care of charitable and similar organisations. This is not all. For at the Ministry of Public Health a committee is studying the conditions under which it may be possible to introduce for all, and in the interest of all, the health passport for which the Louise Hervieu Association has agitated for some time. After all, why not? Having resigned ourselves to giving the often impertinent information we have had to part with in the quest for an ordinary passport, why not submit to supplying information that may prove invaluable to the doctors who are new to us and whose aid we wish to invoke?

THE FALLING BIRTH-RATE

Dr. Boverat, president of the Alliance Nationale Contre la Dépopulation, has recently pointed out that in 1937 there were less than 620,000 live births, whereas in 1876 there were 1,022,000. This decline has assumed Gadarene violence during the past six years in which the annual birth-rate has declined by more than 120,000. At the present time only 870 girls are born to every 1000 women—a deficit of 13 per cent.; Paris by itself is still more sterile, with only 500 per 1000 women. If the rhythm of the last

few years is maintained in the years to come, there will be 100,000 fewer births five years hence than there are at present. For the past three years France has been among those countries whose birth-rate is below their death-rate. Meanwhile, with the increase in the average expectation of life, the numbers of the aged will continue to grow for the next thirty years at least. The armaments race between the nations, so noisily advertised, may in the end prove a much less serious matter than the stealthy birth-rate race in which France is being hopelessly outdistanced by Germany and Italy.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENT)

SYPHILIS LEGISLATION

IN my letter published in your issue of Jan. 22nd I referred to pending Bills in the New York legislature. Both of the Bills referred to have now passed the legislature and the Bill requiring blood tests during pregnancy or at delivery was signed by Governor Lehman yesterday (March 18th) in the presence of the health commissioner of New York City, the deputy health commissioner of New York State, Dr. Walter Clarke representing the American Social Hygiene Association, Dr. Emily Barringer, president of the New York Women's Medical Association, and others. Originally the Bill required that the result of the blood test must appear on the birth certificate. This provision was stricken by the Assembly with the concurrence of the senate. The Act now requires that the certificate should state whether the test was made and if not, why not.

Although this Bill embodied legislation which has never before been contemplated in America, its passage was never in doubt. It was supported by numerous medical and welfare organisations as well as by the official health departments of State and city. The companion Bill requiring serological tests and a medical examination for syphilis before marriage met, on the other hand, with opposition and its fate was considered highly doubtful. However, within a few hours of the signing of the one Act this second Bill passed the Assembly with a majority of 98 to 38 and has gone to the Governor for signature.

A.M.A. POLICY

In my letter published on Feb. 5th under the above title, I quoted a resolution of the American Medical Association trustees on medical care and a projected conference of the trustees with the committee of physicians advancing principles and proposals for the improvement of medical care. The sequel to both of these developments is published in the *Journal* of the Association for March 5th and 12th. On p. 127B are published the official suggestions for the conduct of a study of medical care. The suggestions are heavily freighted with suspicion that "statements have been circulated by certain individuals and interests hostile toward the medical profession to create the general belief that medical services and facilities are grossly insufficient and intentionally difficult to obtain." The investigators are thus indirectly urged to prove that services and facilities are not grossly insufficient. It is to be feared that the survey may result in a brief for the sufficiency of the present services rather than an investigation of the present need for better medical care. Also it is not quite clear how the profession is to estimate the number of persons who need medical care but who do not ask for it. I have to admit that forms have been sent to county medical societies which I have not yet seen.

On p. 149B of the March 12th issue is reported a meeting of the trustees with the committee of physicians. The trustees agreed "that there should be more discussion in the *Journal* of social and economic problems concerning the provision of medical care with the presentation of various aspects of the subject." This agreement must be read in conjunction with a statement signed by the secretary of the committee and published on p. 141B. It is hailed by the New York *Post* as "a great victory for the liberals in organized medicine." The New York *Times* more cautiously says that a notable victory has been won "if a physician may now count within reason on the publication of his disagreement with the *Journal's* views." This remains to be seen.

OBITUARY

WE have to record the death of Dr. THOMAS ROSE on March 21st at his old hospital, the Middlesex. He qualified as M.R.C.S. in 1902, later gaining the Hetley clinical prize, and after serving as house physician and house surgeon went to the Chelsea Hospital for Women as resident medical officer, and became a fellow of the Obstetrical Society. His life was to be given to general practice, however, and most of it was spent in Bloomsbury. He early became a police surgeon, and was perhaps best known as surgeon to several West End police stations. But his chief work lay in his own practice, in which he proved himself capable and resourceful—as many of his own profession can testify, for he attended the families of many of them. A Yorkshireman, of slow speech but humorous, he seemed as tireless as he was kind, and he was always ready to help a friend or patient. When he retired a few years ago to the Scottish city of Dunblane his qualities were soon recognised, and he was able to take an active part in public work. He had been re-elected provost shortly before the onset of the illness from which he died, in his 67th year.

Surgeon Rear-Admiral DONALD TEMPLETON HOSKYN, who died on March 28th at Exminster, was the son of Captain Richard Hoskyn, R.N. Born at Kingstown, co. Dublin, in 1857, he studied at University College, London, where he was awarded the gold medal in physiology and later was ophthalmic assistant in the hospital. Having qualified L.S.A. in 1879 and M.B. Lond. four years later, he entered the Navy and was surgeon of the *Curaçoa* on the Australian station in 1894, when he received the thanks of King Malietoa and the Samoan government. In 1910–12 he was deputy surgeon-general at Haslar, then P.M.O. at Hong-Kong until 1916, when he was transferred to take charge of the R.N. Hospital at Chatham, and then became D.C.M.S., Bristol area, of the Ministry of Pensions. He retired from the Navy with the rank of surgeon rear-admiral. He had lately been living at Ashbrittle, near Wellington, Somerset.

SAVE THE CHILDREN FUND.—The panel of honorary medical advisers of this fund has been enlarged and now consists of the following members: Sir Francis Fremantle, Dame Louise McIlroy, Dr. Eric Pritchard, and Dr. Matthew Ray. Mrs. Susan Isaacs, D.Sc., the psychologist, has become associated with the fund as a vice-president, and Dr. Ray also holds this office.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A CONSULTING PHYSICIAN

I

A CONSULTING physician to a hospital has a position of great dignity but of no importance. When I was on the active staff I always tried to be particularly polite to members of the consulting staff on their occasional visits. I thought they were dead without knowing it. Then came the "abhorred shears" and cut me off. Somewhat to my surprise I felt that I was nevertheless still alive; indeed in some respects more so. I had got to regard the life of the hospital, in which more than half my days had been spent, as the very hub of existence. Although there was still not much time to "stand and stare" there was more opportunity of gaining wider impressions of life as a whole. It is one of the many compensations of growing older that in middle age one can watch with increasing interest the spacing out of one's contemporaries at school and college in the race of life. Now I could lean over the rails and look at the race from outside, all passion spent as far as competition goes. Moreover it was a pleasing thought that as no one would now be advantaged by my death, no one would presumably wish for it.

I am not troubled by the painful feeling "If only I had my time over again," and that not because of smug self-satisfaction. Of course I should have preferred to have done many things differently, but should I, given a second chance? That assumes one could use painfully gained experience to avoid similar mistakes. Barrie showed us otherwise in "Dear Brutus." But quite apart from this, do I want to repeat the flea-bitten experiences of an extern midwifery clerk?—which by the way gave me a valuable insight into the lives of the very poor. Do I want again to attend to Saturday night "drunks" in the Casualty Department? The answer is not in doubt. Do I want to undergo again the terrors of examinations? A distinguished professor told me that he often had nightmares of missing a First in his Tripos for 12 years afterwards. That tells its own tale. Do *you* really want to go back?

I shall try to avoid discussing the changes I have seen; we seniors love to do it and when it does not bore our juniors it gives them the impression that we were trained in the dark ages. In the retrospect the span of one's own experience seems astonishingly short; one can be helped to realise its length by measuring an equal span backwards from the same starting-point and seeing what was the state of things then. Taking the date of my birth and sweeping backward thus I find Napoleon I at the height of his power and the battle of Trafalgar yet to be won. I started the study of medicine 49 years ago; an equivalent distance backwards lands us midway between the discoveries of Bright and Addison. Cellular Pathology and the Origin of Species were not due for nearly another twenty years. Another impression derived from this mental exercise is how much more remote things seem which happened before our time than those which have happened in our own lifetime.

* * *

Wordsworth "grew old in an age he condemned" and it has been suggested that we are gently prepared for our exit from this world by the inevitable changes which gradually make us feel less at home in it. I think there is something in this when one finds modern music a choice between discordant cacophony and epileptic negroid croonings, modern sculpture meaningless distortion, modern pictures hideous in colour and design, and modern poetry an unintelligible crossword puzzle. I don't feel at home with stark modern furniture and I don't like its dreary coverings of zig-zags in various drab shades of brown. One is still allowed to admire Mozart and Chippendale, however, even if one must only read Tennyson in secret! When I contrast the magnificent outburst of art in Periclean Athens after the Persian War with the vapourings of modern art since the Great War I am tempted to speculate on the underlying psychological factors. The Greeks were filled with optimism, the present age is sick with apprehension. This may be largely due to that increased awareness which is the note of the twentieth century. Readers of Jane Austen and her contemporaries have often commented how little their books are tinged with the wars and rumours of wars amid which they were produced. How much is this awareness of outside perils maintained through the hour by hour information poured out by the daily press from all over the world? Amid all this disquiet and clamour I turn with relief to the advance of medicine. Despite some disagreeable eddies and unsavoury backwaters, its main stream runs clear and sweeps onward with a gathering impetus. Why therefore do we find ourselves held in lower esteem by the public than ever before? I don't mind Mr. James Douglas calling us "medical imbeciles" because no one ever takes him seriously—not even himself, I suspect. Mr. Cyril Scott presents a more detailed indictment in his "Doctors, Disease and Health," and, asserting that "countless peoples are suffering from the indirect and disastrous results of a misplaced confidence" in our profession, proceeds to inform us that there is only one disease, auto-intoxication combined with starvation of the inorganic salts to be found in vital foods. But in order to understand its various manifestations we must turn to the study of astrology. He knows that heredity plays a negligible part in the forming of types; the stars see to that. Here is the evidence, "My father was a typical Leo native, broad shouldered and exceedingly robust. As Leo governs the heart and back he was subject to occasional attacks of lumbago and eventually died of heart disease." Q.E.D.! Mr. Cyril Scott, happy man, was "born with Virgo rising," thus escaping pains in the back and is thereby endowed with "an especial interest in matters of health and particularly in diet." I should have thought that moonshine was as responsible as the stars for such a mental attitude. Of course he knows the cause of cancer, yet his advice is a little ambiguous; on page 140 he says salt is a factor in its causation but by the time he reaches page 173 he has come to the conclusion that when the body is starved of mineral salts trouble is likely to accrue. I always thought that sodium chloride was a mineral salt and that cancer ranked at least as a "trouble." Chapter 23 is entitled Various forms of Obsession, on which the author should indeed be an authority. Mr. Cyril Scott is a musician, and to-day musicians

claim that they alone are capable of judging music; evidently they can judge medicine also. My excuse for quoting from this farrago of nonsense is that it has not only been favourably reviewed but is symptomatic of that revolt against reason which is a characteristic of this epoch. There is a craving for magic and authority inherent in us all, particularly when we are ill. The gold-headed cane of the physician of the past became his rod of Æsculapius and when he cast it aside and tried to appeal to rational and scientific procedures he lost a powerful weapon. Primitive man believed that disease and death could only come through external influences, either human or divine, and there is a lot of primitive feeling in us still. With the waning of the nineteenth-century conception of an overruling Providence, human agencies were increasingly held responsible. So naturally the doctor came in for the blame. Some years ago a lady had the pleasure of paying damages to her doctor for alleging that he had murdered her husband. A little reflection would have convinced her that putting it at its lowest there are good and sufficient reasons why a doctor would not murder a patient who was a well-known baronet. That is not the way that practices are built up or maintained. In the grief of her bereavement she reverted to a primitive method of thinking.

Yes—this is an age of unreason. But when I was asked, what did the eighteenth century, the age of reason, do for humanity, I had no answer.

PANEL AND CONTRACT PRACTICE

Facts and Figures for London

IT is a long time since the London insurance committee gave any public account of its doings. The last "annual" report dealt with the year 1926, and the report that has just been issued, although primarily concerned with the year Dec. 31st, 1937, is designed to cover the intervening period and provides material for comparing the position in 1937 with that in 1913 when medical benefit was instituted. In 1913 there were in London 1462 insurance practioners; in 1937 there were 2155, of whom 100 were medical officers of hospitals and the like; during the period the number of persons on their lists had risen from 1·31 to 1·87 millions. In 1937, the average number of persons on a practitioner's list was 866. The insured persons in the county for the first quarter of 1913 numbered 1·53 millions, 1·90 millions on Jan. 1st, 1937, and with the advent of the juveniles next month the number will probably pass the 2 million mark.

Local transfers, that is, where the insured person has not removed beyond the area of practice of his original practitioner, are comparatively few, and even so about a quarter of those who apply for consent to transfer do not take advantage of the permission. The figures are: applications 1·26 per 100 of those on practitioners' lists, transfers 0·99. In addition, 9299 transfers were effected with the consent of both doctors.

The capitation-rate has varied during the 25 years: from 1913 to 1919 it was 7*s.*, in 1920 and 1921 11*s.*, in 1922 and 1923 9*s.* 6*d.*, and from 1924 it has remained at 9*s.* During the early part of the period there was provision for an additional payment when the sum available for the supply of drugs and appliances was not fully expended (the floating sixpence); in 1918 and 1919 additional payments were made by way of war bonus, while from October, 1931, until July, 1935, deductions were made as a special contribution to the Exchequer. The average value of each unit of credit for the years 1913 to 1917 was 6*s.* 6·8744*d.*, in 1930 it was 8*s.* 11·3746*d.*, in 1935 9*s.* 1·1719*d.*, in 1936 9*s.* 2·5254*d.*, and in 1937 (this figure has become available since the preparation of the report) 9*s.* 2·7695*d.*

London practitioners make few claims for emergency treatment or administration of anæsthetics. Only 146 claims in respect of treatment in emergencies were submitted in 1937, of which 28 were disallowed or withdrawn. The policy of the panel committee in discouraging claims for the provision of an anæsthetist has met with such success that in the year under review only 44 such claims were submitted, of which 10 were disallowed or withdrawn. Range of service cases numbered 113, 85 being for ophthalmic services, 7 for ultra-violet rays, 4 for infra-red rays, and 16 for miscellaneous services, mostly surgical. One claim only was rejected, the service being intravenous injections for tabes dorsalis; 57 of the 85 ophthalmic claims came from one doctor.

The cost of medicines and appliances for the insured population of London in 1937 amounted to over £303,789, the number of prescriptions priced reaching the record figure of 9,050,324. The increase in the number of persons included in practitioners' lists reduced the average number of prescriptions per person as compared with 1936 from 4·99 to 4·87, and the cost per person from 39·43*d.* to 39·26*d.* The average cost per prescription rose, however, from 7·91*d.* to 8·06*d.*

It is reasonable to assume that the number of consultations, either at home or at the doctor's surgery, approximated to the number of prescriptions issued; we note with satisfaction that the medical service subcommittee had to deal with only 13 complaints during the year, and of these less than half were substantiated. Six effective complaints arising out of 9 million consultations does not suggest much dissatisfaction with the standard of treatment provided.

Thirsty Patients

In the first quarter of last year 139 insured persons in Lancashire each received more than twenty prescriptions from the doctors whom they had chosen to attend them in health and sickness. This is one of the salient facts in a report by a department of the Lancashire insurance committee which is always watched for with interest. It might be felt that so laborious an analysis of insurance prescriptions occupies time which would be better spent otherwise, but against that is to be set the really amazing output of the prescription pricers who can deal accurately with nearly three thousand prescriptions a day, pricing every item to one-tenth of a penny, and this in spite of the fact that the writing in more than a hundred instances was illegible and in many more only intelligible to a trained eye. The average total cost per prescription in the year was 8·32*d.*, the average cost per insured person being 43·58*d.*, and it seems that in Lancashire during the last twenty years the average number of prescriptions issued per insured person has risen from 2·91 to 5·24. This is a rate of increase much in excess of that for the country as a whole; and even the *Manchester Guardian* with its knowledge of local custom finds it hard to account for.

CORRESPONDENCE

THE SUBURBAN NEUROSIS

To the Editor of THE LANCET

SIR,—I should like to congratulate Dr. Stephen Taylor on drawing attention to a serious social problem which is so often forgotten or lightly glossed over. I think the root of the problem may be classified as (1) fear of the future, generally arising from financial causes, which could be remedied by a suitable insurance system, (2) lack of communal interests.

Let Mrs. Suburbia go to her nearest town hall and offer her services either as a voluntary worker in a maternity and child welfare centre or as a school manager or in one of the newly developed A.R.P. schemes. There is so much good work to be done in the world which would bring the lady many friends and a new outlook on life. Meeting people much poorer than herself would tend to make her more contented with her lot. Meeting people with physical symptoms worse than she ever dreamt of will tend to stop neurosis.

Lastly, if she does a job on the local A.R.P. it will make her realise the priceless blessings of peace and be contented to rub along with the husband she once chose and would hate to lose in another war. In other words, let her try to attain a bigger and fuller outlook on life. Perhaps then she will appreciate the comforts and security of a suburban villa.

I am, Sir, yours faithfully,

CECIL CHRISTIE,
Chairman of Maternity and Child Welfare,
March 25th. Paddington Borough Council.

To the Editor of THE LANCET

SIR,—I am sorry to see that Dr. Stephen Taylor, after making such a careful and penetrating appraisal of the fate of the suburban married woman, has allowed himself to take up the traditional social position of the psycho-analyst. The futility inherent in the lives of women unable to occupy themselves fruitfully in the present social organism is becoming a little obvious by now. Those without employment or career of their own can hope to find solace and fulfilment in rearing children and managing a home only if freed from the anxiety of financial insufficiency and the ignorance which follows a necessarily incomplete education.

I fail to see the purpose of detailed analyses of the misshapen products of twentieth-century civilisation if they are not coupled with proposals for radical treatment. Dr. Taylor, who solves the problem by advocating petty distractions, is really adopting a reactionary attitude which leaves the causative framework untouched. Let us face the facts. Society, as now constituted, is bound to turn out these unhappy creatures so long as it denies them occupations providing complete satisfaction and a dependable economic background. Palliation has its disadvantages, and not the least of these is that it obscures, perhaps unconsciously, fundamental causes. Is it altogether a coincidence that Dr. Taylor warns us that "the latent feelings and strivings of the new mental slum-dwellers" provide a "hopeful field for the teachers of new, and possibly dangerous, political ideologies"? New, yes; but dangerous to whom?

I am, Sir, yours faithfully,

Exeter-road, N.W., March 28th. DAVID LE VAY.

PAINFUL FEET

To the Editor of THE LANCET

SIR,—May I be permitted to correct a statement in your report of my contribution to the discussion on painful feet at the meeting of the Hunterian Society (p. 727). As reported the impression may be created that chiropodists themselves manipulate feet. I said no such thing, and nothing could do more harm to the cause of chiropody than for this erroneous impression to gain ground. What I said was that the services of the chiropodist are as essential as those of a masseuse in running an orthopædic clinic, indeed they are complementary. The rôle of a masseuse is to restore function by developing muscle power and re-educating normal reflexes which are temporarily in abeyance. Since a painful stimulus, whether due to adhesions or corns, always takes precedence over any other afferent impulse, the masseuse is hampered in her work of re-education until either the adhesions are broken down by manipulation or the corns eradicated by the chiropodist.

I am, Sir, yours faithfully,

Wimpole-street, W., March 27th. C. LAMBRINUDI.

CHEMOTHERAPY OF MENINGITIS

To the Editor of THE LANCET

SIR,—In your leading article of March 26th you say that recovery from streptococcal meningitis has hitherto been "most exceptional," and you quote a description of 13 recoveries among 17 cases as "quite astounding"; the implication being that sulphanilamide treatment has greatly improved the outlook. Actually avoidance of delay is the one factor of importance in the treatment of otitic septic meningitis; this is one condition in which every hour counts. I drew attention to this in 1926[1] and again in 1931,[2] when I published a series of 12 cases with 8 recoveries, and showed that all 5 treated before the end of the second day from onset recovered, but only 3 out of 7 treated on the third day or later. In 1936[3] I could record "seven cases treated in less than three days from onset—all recovered; among sixteen treated after that time only four recovered." Cases treated since then have received sulphanilamide[4]; one "under three days" died, while of two "over three days" one died and one recovered—not quite such a good record as before, though of course this has no significance. The details of treatment will necessarily vary with each case. The principles are:

(1) Mastoidectomy (the simple Schwartze operation often suffices), with as complete eradication as possible of infected tissue, and thorough exposure of the adjacent dura mater; all bone is well rubbed with B.I.P.P. and the wound freely drained.

(2) Repeated lumbar puncture, once or even twice daily, drawing off as much fluid as will flow; if a fine needle is used there is no risk in this. Thick pus may require to be aspirated. As an alternative, if the labyrinth is dead, the internal auditory meatus may be opened to afford continuous drainage of the theca. I have on occasion opened the dura of the middle or posterior fossa during the mastoid operation; but there seems to be no special advantage in this, and the loss of cerebro-spinal fluid may be so great (over six pints a day in one case) as to be

[1] *Bristol med.-chir. J.* 1926, **43**, 91.
[2] *Practitioner*, 1931, **127**, 659.
[3] Hamilton Bailey: Emergency Surgery, Bristol, 1936.
[4] *Bristol med.-chir. J.* 1937, **54**, 211.

dangerous. There is no need for continuous lumbar drainage, which increases nursing difficulties.

(3) Antistreptococcal serum by intramuscular injection, or by the lumbar route, if it is felt that any serum so given will reach the cranial meninges. The introduction of disinfectant drugs directly into the theca seems more likely to cause local damage than to inhibit the meningitis. But I have been accustomed to rely on intravenous colloidal silver (50 c.cm. daily), and since the introduction of sulphanilamide have employed this substance also by mouth or intramuscularly in full doses: hexamine has not in my experience proved helpful.

The figures I have quoted show that streptococcal meningitis secondary to ear disease has a high mortality only in the cases in which treatment has been delayed. While recognising the value of sulphanilamide, I would emphasise the supreme importance of immediate and thorough surgical treatment.

I am, Sir, yours faithfully,

Bristol, March 26th. E. WATSON-WILLIAMS.

THE WEEK-END HABIT AMONG DOCTORS

To the Editor of THE LANCET

SIR,—Medical practitioners will read with surprise the extraordinary accusation by Sir Ernest Goodhart in your issue of March 19th. He suggests that doctors take too many week-ends away from their work.

If his letter is intended to be taken seriously one wonders if he has been singularly unfortunate in his personal experiences with the profession; but his remarks only serve to show the danger of airy generalisations. I have been in general practice for over twelve years and, apart from summer holidays, I do not think that on an average I have had more than two week-ends away per year. None of my colleagues in the district are in the habit of taking frequent week-ends off. Evidently I live in a quite abnormal area.

I believe that the truth is diametrically opposite to Sir Ernest Goodhart's notion. It would surely be in the best interests of their patients if doctors *were* able to take more week-ends away and were able to return refreshed and better able to do justice to their work.

In conclusion, I may add that many doctors will be interested to know where practices exist where the doctors are able to develop this "week-end habit." I am, Sir, yours faithfully,

JOHN LANGFORD.

Wellesley-road, W., March 28th.

OUR COLLEAGUES IN AUSTRIA

To the Editor of THE LANCET

SIR,—The alarm expressed in the letter under this heading in your last issue cannot fail to impress when one reads the names of the signatories; yet one cannot help wondering whether it is, after all, well founded.

It is, perhaps, not fully realised that the Jewish Board of Control is well able to look after the interests of Jews in this country and of those coming into this country from abroad, whether they are members of the medical profession or not. A very large sum of money was raised in this country not many years ago by Jewish people for assisting members of the Jewish race who had been forced to leave Germany, and there is no reason to doubt that they will do the same again now if it should become necessary.

What *does* concern members of the British medical profession is the possibility of a further accession of medical refugees from Central Europe. These, if they are allowed to enter—and there is no reason to suppose that the Home Office will act differently in their case—will presumably be allowed to enter our medical schools, as before, in order that they may qualify to practise in this country, as before. Although it was understood by many of us that permission to remain and practise in this country would be granted to a very insignificant number the cold fact remains that large numbers *are* in practice, with a decided advantage over our own recently qualified men and women in that they are men of previous experience in practice. To the latter is added the distinction of being "continental" practitioners, in the eyes of the British public a mark of distinction that places them at once in a higher category than ourselves.

If it is the aim of the signatories to the letter to welcome with open hands any medical refugees from Central Europe to practise and gain their living here, then to be consistent they must at the same time agitate for one of two measures to be adopted. Either we must reduce the numbers of our own medical students (we have approximately 1 practitioner to every 1000 of population at present) in order to prevent the medical profession becoming overstocked, or they must approach the Home Office with a view to sufficient numbers of non-medical refugees being admitted to this country to provide practice and a means of living for the medical refugees.

I am, Sir, yours faithfully,

AUBREY GOODWIN.

Queen Anne-street, W., March 29th.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 19TH, 1938

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2307; diphtheria, 1556; enteric fever, 17 (23 "expected"); pneumonia (primary or influenzal), 1409; puerperal pyrexia, 200; cerebro-spinal fever, 41; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 4; dysentery, 125; ophthalmia neonatorum, 118. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 25th was 5756, which included: Scarlet fever, 844; diphtheria, 1182 (carriers 42); measles, 2284; whooping-cough, 312; puerperal fever, 19 mothers (plus 13 babies); encephalitis lethargica, 282; poliomyelitis, 0. At St. Margaret's Hospital there were 32 babies (plus 16 mothers) with ophthalmia neonatorum.

Deaths.—In 125 great towns, including London, there was no death from small-pox or enteric fever, 66 (18) from measles, 8 (3) from scarlet fever, 16 (3) from whooping-cough, 41 (5) from diphtheria, 50 (15) from diarrhœa and enteritis under two years, and 76 (5) from influenza. The figures in parentheses are those for London itself.

Measles was fatal in 29 great towns; Manchester and Plymouth each had 6 fatal cases, Wimbledon and Liverpool each 3, no other great town more than 2. Diphtheria was fatal in 27 great towns, Manchester and Birmingham each reporting 3 deaths. Thirteen fatal cases of influenza were reported from Birmingham, 4 from Manchester.

The number of stillbirths notified during the week was 249 (corresponding to a rate of 34 per 1000 total births), including 35 in London.

PUBLIC HEALTH

Croydon's Obstetric Service

AN appendix to a clinical report on Croydon's obstetric service for 1936 compiled by Dr. R. F. Thomas, full-time assistant medical officer for obstetrics and gynæcology, describes in some detail the obstetric scheme of the borough. This scheme "aims at the ideal of complete antenatal and postnatal medical supervision under the same whole-time medical officer." There is no extern midwifery scheme conducted by the council, and 32 of the 74 maternity beds are in St. Mary's Maternity Hospital, where the patients are attended by a rota of six local practitioners. All these patients, and a proportion of the midwives' cases are, however, seen by Dr. Thomas at the council's antenatal and postnatal clinics, where he has the help of a woman assistant medical officer of health. The obstetrician is also available for consultation by practitioners about cases under their care delivered at home, when the patient cannot afford a private consultant; 28 such patients were examined by him in 1936. He is in charge of the puerperal infection unit at the Borough Hospital and of 36 antenatal, postnatal, and gynæcological beds at that hospital.

The report covers 1500 cases, attended in the obstetric department of the Mayday-road Hospital, in St. Mary's Maternity Hospital, and in the puerperal infection unit. This represents 42 per cent. of the births in the area. They have been divided into booked and emergency cases, and extensive tables, arranged in the form recommended by the section of obstetrics and gynæcology of the Royal Society of Medicine, emphasise particularly the value of antenatal supervision. There were two maternal deaths in the 1257 booked cases, and six deaths in the 192 emergency cases (excluding four deaths of patients admitted after the onset of pyrexia).

Much has been written about team-work in obstetrics, and the necessity for coöperation between the different units of a maternity service. This scheme requires a high order of coöperation and coördination for its successful working, and Croydon deserves congratulation on having implemented it with such satisfactory results.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Food and Drugs Bill

IN moving the second reading of the Food and Drugs Bill in the House of Lords on March 24th Viscount GAGE said that the Bill represented the third of a series of measures dealing with local government and public health based on the work of a Departmental Committee appointed in 1929, the two previous measures being the Local Government Act 1933, and the Public Health Act 1936. Part I of the present Bill contained general provisions as to food and drugs and dealt with the seizure and condemnation of unsound food. It also contained the very important power to make regulations with regard to the importation, preparation, storage, sale and delivery of food which are now conferred on the Minister of Health by the Public Health (Regulations as to Food) Act 1907. Part II dealt with milk, dairies, and artificial cream, and Part III with certain other foods, the most important being bread and flour. The existing law relating to bread and flour dated back to the Bread Acts of 1822 and 1836. Those Acts were now obsolete, both in form and substance, and the question of their supersession had for some time been under consideration. Part IV reproduced provisions in the Adulteration Act of 1928 relating to importation offences, and Part V dealt with the operation by local authorities of markets, slaughter-houses, and cold-air stores. As in the case of the Public Health Act 1936, a great simplification and shortening of the law would be effected by the Bill. Its aim was not to lay down a perfect code of law, which would involve some matters of acute controversy, but rather to gather together in intelligible shape the law relating to food and drugs and thereby to provide a firm foundation for future legislation. Lord MANCROFT said that there ought to be in this Bill some provision to protect bread and other foods against insanitary handling in delivery. It should also give power to local authorities to prevent shopkeepers exhibiting vegetables which were to be sold for food in any place or receptacle on the level of the pavement. It was necessary to teach the people that milk and bread and vegetables which were produced pure should be kept free from contamination after they had been dispatched for delivery.

Lord ADDINGTON, speaking as chairman of the Departmental Committee which drafted the Bill, said that there were a large number of matters on which the Minister might make regulations—milk and dairy regulations, for example—and those included the distribution of milk, the sealing or closing of churns and other vessels, the display of the vendor's name and address, and the abstraction of fats. They had gone as far as they could, consistently with the present law, in that direction. This Bill allowed regulations to be made for preventing danger to health from the importation, preparation, transport, storage, exposure for sale and delivery of bread or flour, and laid down very clearly that it was the duty of the Food and Drugs authority to enforce and carry out these specific regulations. Lord STRABOLGI said all this was permissive; there was nothing mandatory about it in nearly every case. The method of delivering bread in this country was absolutely uncivilised; all bread ought to be wrapped, as it was in the United States. The Bill was referred to a joint committee of both Houses of Parliament for detailed examination.

Unemployment Benefit Changes

In the House of Commons on March 25th Mr. E. BROWN, Minister of Labour, said that at the end of December, 1937, the general account of the Unemployment Fund had a balance of £60,379,000. The statutory committee considered it would be prudent to hold a portion of each annual balance as a reserve, and this had been previously agreed to by the House of Commons. They should do nothing in the administration of the Fund which would need undoing in the years ahead, even though the circumstances of unemployment were adverse. Certain improvements were estimated by the committee to cost £15,366,000 and provision for a reserve and the financing of improvements already decided upon made this up to £52,900,000. That left a certain disposable surplus. The committee recommended increasing the rates for adult dependants, including wives, from 9*s.* to 10*s.* and making an alteration regarding the additional days of benefit in favour of the man with a good record of five years' contributions. The altered ratio would mean seven weeks more benefit payable to those who had the necessary contributions. With regard to agricultural workers

the balance on Dec. 31st was £1,825,000, which included £647,000 balance at the end of 1936. A prudent view was particularly needed in that case because of the small experience of the working of the scheme. The committee recommended the reduction of the waiting period from six days to three at a cost of £50,000 per annum, the reduction of the rate of contributions by ½d. for each party, and an increase of the weekly rate of benefit to men between the ages of 18 and 21 from 10s. to 12s. These changes would make the income of the Fund £180,000 a year less and would increase expenditure by £42,500.

In the House of Lords on March 29th the Royal Sheffield Infirmary and Hospital Bill was read the third time and passed.—The Housing (Financial Provisions) Bill was read the third time and passed.

QUESTION TIME

WEDNESDAY, MARCH 23RD

Cod-liver Oil Imports

Mr. ROBERT GIBSON asked the President of the Board of Trade what were the imports of cod-liver oil from Newfoundland in 1929 and 1937, respectively, and the production of the said oil in the United Kingdom in the same years; and what were the average prices of the said oil in those years.—Captain WALLACE, Parliamentary Secretary to the Board of Trade, replied: Total imports into the United Kingdom of cod-liver oil consigned from Newfoundland (including the coast of Labrador) amounted to 519 tons in 1929 and to 871 tons in 1937; the bulk of these imports consisted of unrefined oil used for industrial purposes. Particulars of United Kingdom production in these years are not available but it is known to have increased substantially. For Newfoundland oil, I have no detailed price information for the years in question, but finest Lofoten steam-refined non-freezing medicinal cod-liver oil is quoted regularly in the *Chemist and Druggist*, and for that description the price averaged about 110 shillings per barrel, c.i.f. London, in 1929 and 98·75 shillings in 1937.

Extent of Public Assistance

Mr. GORDON MACDONALD asked the Minister of Health the number of persons in receipt of public assistance in July, 1931, and on the latest date on which figures are available, giving separate figures for Lancashire.—Mr. BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: On the last Saturday in July, 1931, the number for England and Wales, excluding rate-aided patients in mental hospitals, persons in receipt of domiciliary medical relief only, and casuals, was 972,909. The corresponding number on Saturday, March 5th, 1938, the latest date for which figures are available, was 1,072,191. The figures for the administrative county of Lancaster together with the 17 associated county boroughs were 140,561 and 176,623 respectively.

THURSDAY, MARCH 24TH

Feeding of Necessitous Children

Mr. GEORGE GRIFFITHS asked the Parliamentary Secretary to the Board of Education the number of local education authorities who had laid down income scales in connexion with the feeding of necessitous children; and if it was the Board's intention that where the family income fell below the standard of minimum physiological needs a child should only be fed when or so long as he showed definite physical or educational signs of malnutrition.—Mr. KENNETH LINDSAY replied: 230 local education authorities have laid down income scales in connexion with the feeding of necessitous children. The method of selection for free meals or milk is explained in the Board's Circular 1443, of which I am sending a copy to the hon. Member. It is not necessary that children should show definite signs of malnutrition before they can be fed free. Provision may properly be made for any child who shows any symptoms, educational or physical, however slight, of inability by reason of lack of food to take full advantage of the education provided for him.—Mr. GRIFFITHS: If the child's health has improved will the free meals be stopped, or will they continue as long as the family income is below the scale?—Mr. LINDSAY: No, not necessarily.

School-children Needing Footwear

Mr. TOMLINSON asked the Parliamentary Secretary to the Board of Education whether, in view of the fact that the Unemployment Assistance Board had refused 70 per cent. of the applications made to them for the provision of footwear for necessitous school-children during the past month in the Lancashire county area, he would consider the advisability of granting the facilities for the making of this provision to the local education authorities.—Mr. KENNETH LINDSAY: I am not at present in a position to confirm the facts stated by the hon. Member, but I am communicating with the Unemployment Assistance Board and will let the hon. Member know the result in due course.—Mr. TOMLINSON: Can the Parliamentary Secretary inform the House why the President constantly withholds the power from local education authorities to carry out this work?—Mr. LINDSAY: As the hon. Member knows perfectly well it would involve legislation, but I should be glad to inquire into specific facts.

Treatment of Rheumatism

Mr. DAY asked the Minister of Health whether, in view of the loss of national efficiency and the suffering experienced by persons due to the incidence of rheumatic complaints, he would set up a committee to consider the best methods of the treatment of rheumatism and the provision of facilities for that treatment.—Sir KINGSLEY WOOD replied: Work in this connexion is already being undertaken by the Empire Rheumatism Council in coöperation with a special committee of the Royal College of Physicians. The Medical Research Council also encourages and assists research in the various aspects of this disease.—Mr. DAY: Can the right hon. gentleman say whether any Government grant will be made towards those who are undergoing this treatment?—Mr. A. JENKINS: Is the right hon. gentleman aware that there are many thousands of people suffering from this complaint who are not able to get proper and adequate treatment, and will he take immediate steps either by setting up a committee or by the alteration of the National Health Insurance Acts, in order to see that people may get adequate treatment?—Sir K. WOOD: That is another matter.

Extension of Attested Herds Scheme

Mr. PRICE asked the Minister of Agriculture if any assistance would be given to owners of beef cattle in connexion with the scheme for eradicating tuberculosis from the herds; what form that assistance would take; and the date on which it would come into operation.—Mr. MORRISON replied: Under the powers conferred by Section 20 of the Agriculture Act, 1937, it is proposed to extend the present Attested Herds Scheme as soon as practicable to enable payments to be made in respect of herds maintained primarily for beef production. I am not yet in a position to announce the form that assistance will take or the date on which the arrangements will operate, but I hope to be able to make a statement on the subject at an early date.

Nutritive Value of Skimmed Milk

Viscountess ASTOR asked the Minister of Agriculture if he was aware that the Food Council in its recent report condemned the waste of 6½ million gallons of skimmed milk; and, in view of the stress laid upon its value as a nutritive food by the advisory committee on nutrition, what action was he contemplating to avoid this waste in future.—Mr. MORRISON replied: I am aware of the statement to which the Noble Lady refers, although the estimate of gallonage should, in my opinion, be accepted with reserve. The supply of skimmed milk is inconstant, since it depends upon the varying quantities of whole milk available for manufacture into butter and cream, and it is in greatest supply when the overflow of whole milk from the liquid market is largest. Moreover, many manufacturers have no facilities for converting skimmed

milk into a product which can be conveniently stored, handled, and transported. Even those manufacturers who are so equipped have difficulty on occasions in finding outlets for all the skimmed milk left from their manufacturing operations, and, for the others, the problem is largely one of finding a steady sale for a highly fluctuating quantity and no satisfactory solution has yet been found.

Viscountess ASTOR: Is it not the case that the Milk Marketing Board refuse to allow this skimmed milk to be sold? That is their policy. Are they not thereby depriving thousands of children and other people of the benefit of this skimmed milk?—Mr. MORRISON: That is not quite true. The Milk Marketing Board do not pay rebates on skimmed milk when sold by the purchaser for liquid consumption, as the purchaser would give almost as much for skimmed milk as for whole milk and the Board would thereby be subsidising the sale of skimmed milk to the detriment of their own producers. What we want is that people should drink whole milk and not skimmed milk.

MONDAY, MARCH 28TH

Telephone Mouthpieces and Infection

Commander OLIVER LOCKER-LAMPSON asked the Postmaster-General whether, in view of the fact that it was recognised by competent medical authorities that the mouthpieces of public telephone instruments when unattended by officials to cleanse them were carriers of germs, he would introduce a system whereby unattended public telephones were sterilised regularly so as to ensure that users thereof were not exposed to contagion.—Major TRYON replied: I am advised on responsible medical authority and as the result of extensive investigations in this country and abroad that the risk of infection from the use of telephones is negligible. Nevertheless I can assure my hon. friend that the regulations already provide for mouthpieces and receivers in public call offices to be cleaned with disinfectant at frequent intervals; in urban areas this process is carried out each week-day.

Detention Under the Mental Deficiency Act

Mr. LOGAN asked the Minister of Health if his attention had been called to the case of William Hargreaves, 31 years old, married, Territorial, who was arrested at the Ministry of Labour office, Bootle, by two plain-clothes officers, who informed him they had orders to detain him until an escort arrived from the asylum in which he had been incarcerated 14 years ago, on the grounds that Hargreaves had not been subject and amenable to proper supervision during the 12 years he had been at liberty; and what steps he was taking to have this case reviewed with a view to releasing Hargreaves.—Mr. BERNAYS replied: My right hon. friend has caused inquiry to be made in the case of William Hargreaves. He was sent to an institution for mental defectives on July 10th, 1925, on the authority of an order made under the Mental Deficiency Act, 1913. He was allowed to leave the institution on licence on Dec. 22nd, 1926. The periods were extended from time to time until May 11th, 1934, when the licence was revoked on the ground that its conditions had been broken. The patient was then treated as an escape from licence and was eventually brought back to the institution on Feb. 3rd, 1938. He was again allowed to leave the institution on licence on March 9th. The Board of Control have reviewed the whole of the circumstances of the case, and as a result have directed William Hargreaves's discharge from the order under the Mental Deficiency Acts made in respect of him.

Mr. LOGAN: Is it not a fact that William Hargreaves has been sane all along; that he was released last week simply and solely because of the question being raised in the House, the examination having taken place only during the week; further, is it not a fact that this man has been away from an institution for 12 years, and that he is considered to be mentally sound, and that the Territorial officers under whom he has been working say that he is perfectly sane; and will the Minister say what inquiry, if any, he intends to make if a man is considered to be insane, sent to an asylum, and treated as a convict, and what compensation he intends to pay?—Mr. BERNAYS: Special reports were made in August last year about the case of Mr. Hargreaves and the specialists came to the conclusion that he was not a proper person to be detained in an asylum. It was within the discretion of the Board to accept that recommendation or not, and in fact they did not act upon it.—Mr. LOGAN: In view of the outrage upon public liberty, I intend to raise this question on the adjournment.

TUESDAY, MARCH 29TH

Medical Referees and Workmen's Compensation

Mr. TINKER asked the Home Secretary if he was aware that the present method of medical referees under the Workmen's Compensation Act did not give satisfaction to the injured workmen, and that a change was suggested in the report of the departmental committee set up to inquire into the Workmen's Compensation Act; when he intended to announce the conclusions of the Government on this report; and if he proposed to consult the House prior to arriving at these conclusions.—Sir SAMUEL HOARE replied: The committee's recommendations involve important changes in the present system which could not be carried out without legislation, and I cannot foresee sufficient time this session for legislation of this character. In any case it would, I consider, be an advantage to allow more time, not only for the Government but also for industry and for Members of Parliament, to consider the recommendations of the committee before legislation is formulated, and I shall be glad to receive and consider any representations which hon. Members may wish to make on particular points.

THE LANCET 100 YEARS AGO

March 31st, 1838, p. 21.

From a leading article on the diet provided in Dudley workhouse.

. . . When this matter was discussed, recently, in the House of Lords, the opinion of a physician was cited on the subject of the dietary; and Lord MELBOURNE met the arguments of the Bishop of EXETER by a denunciation, not only of this opinion in particular, but of medical opinions generally:—

> "With respect to the case of Dudley itself," his lordship said, "he was not prepared to go into a discussion of it. Thus much, however, he must say, that he had no great opinion of the views of medical men on a subject of this kind; their sentiments on a question of this nature were, in his judgment, the worst that could be attended to. A medical man was more conversant with a fit and proper diet for sick persons than for those who were in health, and everybody knew that even with reference to that, medical men differed very widely in their views and opinions, and in his (Viscount Melbourne's) judgment the best test for such a dietary was the test of experience."

If Lord MELBOURNE had said that the opinions of military or naval men in professional matters were contradictory, and of no value,—if he had used the same language with reference to lawyers, or parsons, twenty noble lords would have been on their legs in a moment to protest against the gratuitous attack. The Premier's sarcasm in the present case was unprovoked, and sure to meet with no retort; but was the statement just? CERVANTES narrates a story in which the governor of a certain island, seated at the dinner table, was highly incensed with one Dr. PEDRO POSITIVE, who waved a white wand, and motioned away every delicacy which his Excellency selected. Governor PANZA consigned the doctor forthwith to a dungeon, and addressed him (not his profession) in unmeasured terms of condemnation as a conspirator against his life. It is easy to conceive a Prime Minister under such circumstances, hard pressed and mortified, giving vent to the taunt ascribed to Lord MELBOURNE. But no doctor in the House of Lords attempted to place a restraint on the indulgence of the Premier's appetite, or to say that he should not have any morceau that he might fancy, from a truffle to a *rognon broché*. The only declaration made was, that the poor men in the workhouse of Dudley were not allowed sufficient food to sustain health,—a humane and timely announcement.

MEDICAL NEWS

University of Cambridge

The university has accepted the offer of the Rockefeller Foundation to provide £8000 towards the support of research in the department of medicine over the period from 1938 to 1942. In any one year the grant is not to exceed £1600. It has been decided to use the money to establish three posts of assistant in research in medicine for this period and the appointments will be made from July 1st.

University of London

Dr. R. V. Christie, assistant director of the medical unit and assistant physician at the London Hospital, has been appointed to the university chair of medicine tenable at St. Bartholomew's Hospital medical college.

Dr. Christie is 35 years of age. He was educated in China and at George Watson's College, Edinburgh. He graduated M.B. at the University of Edinburgh in 1925 and last year he was awarded the gold medal by the university for his M.D. thesis. After holding house appointments at the Royal Infirmary he went to New York in 1926 as assistant to the department of applied physiology in the Rockefeller Institute for Medical Research, and in 1927 he received the Gunning Victoria Jubilee prize for his investigations there. In 1928 he became senior resident medical officer in the Royal Victoria Hospital in Montreal. In 1929 as holder of the Travers Allan scholarship he was granted leave of absence, and he went to Freiburg as assistant in the department of pathology. Later he visited other universities in Germany and Belgium. When Dr. Christie returned to Montreal he was appointed research associate in the McGill University Clinic of the Royal Victoria Hospital. In 1932 he was elected to the American Society for Clinical Investigation and in 1933 he was awarded the degree of M.Sc. of McGill University. He took up his present post in 1935. He contributed the article on dyspnœa and emphysema to the British Encyclopædia of Medical Practice, and his other published work includes papers on lung volume and its subdivisions, and the elastic properties of the emphysematous lung.

Dr. F. R. Winton has been appointed to the university chair of pharmacology tenable at University College. Since 1933 he has been reader in physiology in the University of Cambridge.

Dr. Winton, who is 43, was educated at Oundle School and at Clare College, Cambridge, where he obtained a major scholarship in natural sciences and mathematics in 1912 and a foundation scholarship in 1915. He obtained a first class in part I of the natural sciences tripos in 1915 and after, a period as research chemist at the Mond Nickel Company studied medicine first at Bart.'s and later at University College Hospital, graduating in 1923. From 1924 to 1927 he was a demonstrator in the department of pharmacology at University College and during this time he obtained his M.D. Camb. From 1927–31 while holding a junior Beit fellowship and later a "fourth year" Beit fellowship he acted as part-time lecturer in the department of physiology at the College. He was awarded a senior Beit fellowship in 1931 which he resigned when he was appointed lecturer in physiology in the University of Cambridge. In 1933 he took up his present post. He has published "Introduction to Comparative Physiology" with L. T. Hogben and "Human Physiology" with L. E. Bayliss.

Hunterian Society

A gold medal is awarded annually by this society for the best essay written by a general practitioner. The subject for 1938 is the management of inoperable malignant disease in general practice, and for 1939 the treatment of obesity in general practice. The medal for 1937 was awarded to Dr. J. Wilson Reid of Anglesey for his essay on the prognosis and care of heart disease in general practice. Any registered practitioner resident within the British Empire is eligible. A copy of the rules may be had from Mr. A. E. Porritt, 27, Harley-street, W.1.

Oxford Ophthalmological Congress

The twenty-seventh annual meeting will be held at Keble College from July 6th to 9th. Dr. Bernard Chavasse and a neurologist will open the first discussion, on the ætiology, diagnosis, and treatment of ocular palsies, and the Doyne memorial lecture will be delivered by Prof. A. von Szily, formerly director of the university ophthalmological clinic at Münster. He will speak on the contribution of pathological examinations to the elucidation of the problems of cataract. Papers will also be given by Prof. Hans Lauber (Warsaw), Dr. H. M. Traquair (Edinburgh), Dr. Bernard Samuels (New York), Dr. J. A. van Heuven (Utrecht), and Dr. Czukrasz Ida (Debreçen). Further information may be had from the hon. secretary, Dr. F. A. Anderson, 12, St. John's-hill, Shrewsbury.

University of Leeds

At recent examinations the following candidates were successful:—

M.D.

Doris B. Brown, D. Heap, E. James, and E. J. Wayne.

CH.M.

M. B. Khan.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—A. N. T. Aikman, T. Akroyd, J. B. Ashmore, C. E. Astley, P. D. Bedford, C. H. Boyd, A. Colbert, J. B. Coltman, E. Cope, Patricia M. Dobinson, Ruth Edmonds, G. Farrer, J. M. Fitton, M. M. Frais, M. Goldberg, H. Goldstone, Mary E. Goodson, F. Gouldsborough, A. Green, G. Higgins, J. Hirst, H. J. M. Holland, Adelaide J. G. James, F. Jennings, R. E. Johnson, D. E. Mitchell, L. H. Moss, C. Pickard, J. D. Pickup, T. B. Purdy, P. Rapaport, G. N. Reed, L. Rosenthal, F. Sandy, J. F. Scannell, J. V. Schofield, F. N. Shuttleworth, Ida M. Shuttleworth, S. A. Smith, S. A. Swanson, E. S. Tan, P. E. R. Tattersall, A. L. Taylor, P. J. Waddington, R. P. Warin, K. D. Wood, and I. Young.

Parts II and III.—W. M. H. Shaw (first-class honours); J. K. Drucquer, E. W. Jackson, W. R. Jackson, and R. Orton (second-class honours); G. R. Bedford, D. Benson, J. Braham, W. A. Bridgwood, W. L. Carruthers, D. B. Feather, Dorothy Haigh, R. A. S. Keighley, E. S. Levy, S. Madden, W. Maude, R. B. Raj, G. F. Reid, Phyllis M. Richards, J. F. Robinson, J. W. Scholey, S. H. Segerman, A. P. B. Waind, A. J. Ward, T. I. Watkins, D. C. Williams, and Kathleen Wilson.

B.CH.D.

Dorothy M. Bateman (second-class honours).

L.D.S.

F. B. Copeland, J. Dawson, C. G. Dodd, G. B. Hopkin, F. G. Rushworth, S. A. Thornton, Jean Townend, D. J. Watson, and N. P. Williamson.

D.P.M.

W. Sharp.

D.P.H.

W. Hobson and R. S. Illingworth (with distinction); and T. W. Smailes.

British College of Obstetricians and Gynæcologists

The following candidates have satisfied the examiners and have been awarded the diploma of the college:—

B. H. Bakewell, S. G. Baldwin, V. M. Crosse, J. C. C. Dawson, F. L. Firkin, J. W. Hannay, J. C. Harvey, H. S. Lanceley, G. S. Lester, H. G. Miller, G. D. N. Milne, H. G. Rees, S. R. Saunders, S. Shrikhande, W. J. Stokes, and M. Thomas.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty, with Dr. John Henderson in the chair, Dr. Samuel Lazarus was admitted to the fellowship.

Colonial Medical Service

The Secretary of State for the Colonies has appointed Dr. A. G. R. Smart to be his assistant medical adviser.

Dr. Smart was a member of the Malayan Medical Service from 1912 to 1934. From 1935 until recently he held the appointment of senior medical officer at St. Vincent.

Royal Medical Benevolent Fund

The 102nd annual general meeting of the fund will be held at 11, Chandos-street, London, W., on April 5th at 5 P.M., when Sir Thomas Barlow, F.R.S., the president, will be in the chair.

London Jewish Hospital Medical Society

The annual oration of this society will be delivered by Prof. Henry Cohen on Sunday, May 1st, at 7, Sussex-place, London, N.W., at 8.30 P.M. He has chosen as his title "A Century Ago—a Medical Retrospect."

Beit Memorial Fellowships

An election of junior fellows will be held in July, 1938.

The fellowships are of an annual value of £400 or £300, and they are tenable for three years. The trustees will give some preference to candidates proposing to investigate mental diseases.

Further information will be found in our advertisement columns.

Demonstrations of Contraceptive Technique

On Thursday, April 7th, at 2.30 P.M., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given at the clinic by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher. Medical practitioners and senior students should apply for tickets to the hon. secretary of the Clinic for Constructive Birth Control, 108, Whitfield-street, London, W.1.

Lt.-Col. L. T. Poole, assistant professor of pathology at the Royal Army Medical College, has been appointed hon. physician to the King in succession to Lt.-Gen. Sir James Hartigan, who has retired.

Pharmaceutical Society of Great Britain

The Privy Council have nominated Sir Walter Langdon-Brown and Prof. W. J. Dilling as members of the council of this society in succession to Sir Humphry Rolleston and Prof. J. A. Gunn who have retired. Sir Malcolm Delevingne will continue as the third member nominated by the Privy Council.

George Henry Lewes Studentship

Applications are invited for this studentship, which is of an annual value of £250.

The student is required to give his whole time to research work, normally in the department of physiology, Cambridge, and application should be sent before June 15th to Prof. E. D. Adrian, F.R.S., at that address.

Further information will be found in our advertisement columns.

International Guild of Hospital Librarians

The second conference of the guild will be held in Berne from June 7th to 10th, and optional excursions to the Bernese Oberland and Lucerne have been arranged for June 11th and 12th. The speakers will include Mrs. M. E. Roberts, Mrs. Beddington, Mrs. Raymond, Dr. Georges Duhamel, Prof. Walter Gut, and Dr. Wyrsch. Further information may be had from the secretary of the guild, 48, Queen's-gardens, London, W.2.

Royal Society of Medicine

The society's house and library will be closed from April 15th to 18th, both days inclusive.

Medical Sickness, Annuity and Life Assurance Society, Ltd.

At the annual general meeting of this society held in London on Tuesday last, Dr. F. C. Martley, the chairman, said that the year ending last December had as a whole been satisfactory; the total life assurances showed a small increase and the sickness a very small decrease. The result of the bonus declaration came too late to affect the returns, but since January, 1938, there had been a really substantial increase in both life and sickness as compared with the previous year. The society's funds were growing rapidly and stood at over 1½ million pounds; at the present rate of growth they would, if affairs pursued their normal course, be well over the 2 million mark by the next valuation. The directors felt that in these difficult times it was wise to follow a cautious policy.

The two retiring directors, Dr. Martley and Sir William Willcox, were unanimously re-elected. On the proposition of the chairman, it was agreed to recommend the payment of an interim bonus on all with-profit policies for permanent sickness and accident insurance, and life assurances becoming claims during the year ending Dec. 31st, 1938. Votes of thanks were accorded to the staff and to the chairman.

Appointments

CARSE, JOSHUA, M.D. Durh., D.P.M., Medical Superintendent of the West Sussex County Mental Hospital, Chichester.

COOKSON, J. S., M.B. Camb., Assistant Medical Officer for Derbyshire.

CUNNINGHAM, J. K., M.B. N.Z., Junior Resident Assistant Medical Officer at Bretby Hall Orthopædic Hospital, Derby.

DEVILLE, P. M., M.R.C.P. Lond., Hon. Physician to the Hospital for Diseases of the Skin, Blackfriars.

HARRIS, N. G., M.D., M.R.C.P. Lond., D.P.M., Hon. Physician in charge of the Department of Psychological Medicine at the Middlesex Hospital.

JONES, W. W., M.B. Lond., Assistant Tuberculosis Officer for Sheffield.

SWAIN, MARJORIE, M.B. Manch., Resident Medical Officer at the Fulham Maternity Home and Assistant Medical Officer for Maternity and Child Welfare for Fulham.

London County Council.—The following promotions have been made in the council's mental services. A.M.O. = Assistant Medical Officer:—

MACMAHON, J. F., M.D. Dubl., D.P.M., Deputy Medical Superintendent, Leavesden Hospital;

WALK, ALEXANDER, M.D. Lond., D.P.M., First A.M.O., Cane Hill Hospital;

CHILD, J. P., B.M. Oxon., M.R.C.P., D.P.M., Second A.M.O., Banstead Hospital;

SHAW, DAVID, M.D., M.R.C.P. Lond., Second A.M.O., Bexley Hospital;

FIRMIN, DOREEN P., M.B. Camb., M.R.C.P. Lond., D.P.M., Second A.M.O. in the mental services and seconded for duty at the mental observation unit at St. Pancras Institution; and

REES, W. G., B.M. Oxon., M.R.C.P. Lond., D.P.M., Second A.M.O. in the mental services and seconded for duty at the mental observation unit at St. Francis' Hospital.

Certifying Surgeons under the Factory and Workshop Acts: Dr. K. J. M. GRAHAM (Acton and Ealing, Middlesex); Dr. J. E. FORAN (Barking, Essex); Dr. J. R. CALDWELL (Carnforth, Lancaster); Dr. A. WYNROE (Mossley, Lancashire); Dr. J. G. THOMSON (Radstock, Somerset); Dr. I. CAMPBELL (Swinton, York, W.R.); Dr. T. GIBSON (Worthing, Sussex); Dr. H. R. STUBBINS (Ystalyfera, Glamorgan); Dr. F. C. M. MCILWRICK (Callander, Perth); Dr. A. M. WATT (Dunkeld, Perth); Dr. J. O. SCHOFIELD (Morley, York, W.R.); Dr. F. P. MEEHAN (Duns and Chirnside, Berwick).

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hosp.—H.S., £175.
Ashton-under-Lyne District Infirmary.—Res. Surg. O., at rate of £200.
Bedford County Hosp.—H.S., at rate of £155.
Belgrave Hosp. for Children, Clapham-road, S.W.—Two H.P.'s and one H.S., each at rate of £100.
Birkenhead Municipal Hosp.—Res. M.O., £300.
Birmingham City Education Committee.—Two Asst. School M.O.'s, each £500.
Birmingham Royal Cripples Hosp.—Res. H.S., at rate of £200.
Birmingham United Hosp.—Psychologist for Nerve Hospital, £500.
Birmingham and Midland Eye Hosp.—H.S., at rate of £130.
Brighton Education Committee.—Asst. School M.O., &c., £500.
Bristol Eye Hosp.—Jun. H.S., at rate of £100.
Bristol University.—Sen. Clin. Pathologist, £700–£800.
British Postgraduate Medical School, Ducane-road, W.—First Asst. in Dept. of Obstet. and Gyn., £250–£500.
Cambridge, Dept. of Physiology.—George Henry Lewis Studentship, £250.
Capetown City.—Tuberculosis Officer, £800.
Central London Throat, Nose, and Ear Hosp., Gray's Inn-road, W.C.—Assts. in Out-patient Dept.
Central Middlesex County Hosp., Willesden, N.W.—Jun. Res. Asst. M.O., at rate of £250.
Chelmsford County Council.—Temp. Tuberculosis Officer, £15 per week.
Chester, Barrowmore Tuberculosis Sanatorium and Settlement, Great Barrow.—Jun. Asst. M.O., at rate of £200.
Chester Royal Infirmary.—H.S., £150.
Colchester, Essex County Hosp.—H.P., £150.
Coventry and Warwickshire Hosp.—Cas. O., H.P., two H.S.'s, and H.S. to Ophth. Dept., each at rate of £150.
Derbyshire Royal Infirmary.—H.P., £150.
Dorchester, Dorset County Hosp.—H.S., at rate of £150.
Dudley, Guest Hosp.—H.S., £100–£130.
Guildford, Royal Surrey County Hosp.—Res. Surg. O., £250. Also H.S., at rate of £150.
Harefield, County Sanatorium.—Visiting Anæsthetist, 3 guineas per session.
Herefordshire General Hosp.—H.S. to Special Depts., £100.
Holland (Lincs) County Council.—Asst. M.O.H., £600.
Hosp. for Consumption and Diseases of the Chest, Brompton, S.W.—Res. Surg. O., at rate of £150. Also Asst. Res. M.O. and three H.P.'s, at rate of £150 and £50 respectively.
Ipswich, East Suffolk and Ipswich Hosp.—Cas. O., £144.
Italian Hosp., Queen-square, W.C.—Hon. Ear, Nose, and Throat Surgeon.
Kent County.—Asst. Tuberculosis Officer, £600.
Leicester, County Sanatorium and Isolation Hosp., Markfield.—Jun. Res. M.O., at rate of £300.
Leicester, Isolation Hosp. and Sanatorium.—Deputy Med. Supt., £400.
Liverpool City.—Jun. Asst. Bacteriologist, £400.
Llanelly Borough.—Asst. M.O.H. and School M.O., £500.
London County Council.—Asst. M.O.'s (Grades I and II), £350 and £250 respectively. Also Part-time Cons. Pædiatrist, £125.
London Homœopathic Hosp., Great Ormond-street, W.C.—Two Hon. Clin. Assts. for Manipulative Surgery.
London Jewish Hosp., Stepney Green, E.—Ear, Nose, and Throat Registrar, 20 guineas.
London Skin Hosp., Fitzroy-square, W.—Hon. Physician.
Maidstone, West Kent General Hosp.—H.S., £175.
Manchester, Crumpsall Hosp.—Res. Asst. M.O., at rate of £200.
Manchester Hosp. for Consumption, &c.—Asst. M.O. for Crossley Sanatorium, £200.
Manchester Royal Eye Hosp.—Out-patient M.O., £200. Also H.S., £120.
Manchester Royal Infirmary and University.—Dickinson Scholarships, £300 and £75.
Metropolitan Hosp., Kingsland-road, E.—Sen. and Jun. H.P.'s and H.S.'s, each at rate of £100.
Mount Vernon Hosp., Northwood.—H.S., at rate of £150.
National Hosp. for Diseases of the Heart, Westmoreland-street, W.—Res. M.O., at rate of £150.
Northampton County Mental Hosp.—Deputy Med. Supt., £600.
Norwich City.—Asst. M.O.H., &c., £600.

Nottingham City.—Asst. M.O. for Maternity and Child Welfare, £500.
Plymouth City Isolation Hosp.—Asst. Res. M.O., £300.
Pontefract General Infirmary.—Sen. Res. M.O., at rate of £175.
Portsmouth Education Committee.—Asst. M.O.H. and Asst. School M.O., £500.
Preston and County of Lancaster Royal Infirmary.—H.S. to Eye, Ear, Nose, and Throat Wards and Clinics, at rate of £150.
Reading, Royal Berkshire Hosp.—H.S., H.P., and H.S. to Special Depts., each at rate of £150.
Richmond Royal Hosp., Surrey.—Jun. H.S., £100.
Rochester, St. Bartholomew's Hosp.—H.P., at rate of £150.
Royal Cancer Hosp., Fulham-road, S.W.—Second Asst. Pathologist, £300.
Royal Chest Hosp., City-road, E.C.—Res. M.O., at rate of £150.
Royal College of Surgeons of England.—Professors and Lecturers.
Royal London Ophthalmic Hosp., City-road, E.C.—Out-patient Officer, £100.
Royal Naval Medical Service.—Medical Officers.
Royal Northern Hosp., Holloway, N.—H.P., at rate of £70.
Royal Waterloo Hosp. for Children and Women, Waterloo-road, S.E.—Res. Cas. and Orth. H.S., at rate of £150. Also H.P., at rate of £100.
St. John Clinic and Institute of Physical Medicine, Ranelagh-road, S.W.—Hon. Clin. Asst. in Orthopædic Dept.
St. Mary's Hosp. for Women and Children, Plaistow, E.—Res. Surg. O. and Res. H.P., at rate of £155 and £150 respectively.
St. Paul's Hosp. for Urological and Skin Diseases, Endell-street, W.C.—H.S., at rate of £100.
Samaritan Free Hosp. for Women, Marylebone-road, N.W.—H.S., at rate of £100.
Sheffield, Jessop Hosp. for Women.—Res. M.O., at rate of £150.
Sheffield Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept., at rate of £80.
Staffordshire General Infirmary.—H.P. and H.S., at rate of £150 and £175 respectively.
Stirling District Mental Hosp., Larbert.—Jun. Asst. M.O., £300.
Stoke-on-Trent, Burslem, Haywood, and Tunstall War Memorial Hosp.—Res. H.S., at rate of £175.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Res. Anæsthetist, £150.
Sudan Medical Service.—Vacancy, £E.720.
Swansea General and Eye Hosp.—H.P., at rate of £150.
Torquay Borough.—Deputy M.O.H. and Asst. School M.O., £600.
University College Hosp. Medical School.—Beit Memorial Scholarships for Medical Research, £400.
University of London.—Chair of Anatomy, at London Hosp. Med. College, £1000.
Walsall General Hosp.—Asst. Hon. Surgeon to Ear, Nose, and Throat Dept.
West London Hosp., Hammersmith, W.—Additional Hon. Reg. to Throat, Nose, and Ear Dept.
Winchester, Royal Hampshire County Hosp.—Two H.S.'s, each at rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Bethesda (Carnarvon).

Medical Diary

April 4th to April 9th

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY.
Orthopædics. 8.30 P.M., Dr. H. J. A. Colvin and Mr. H. J. Seddon: The Treatment of Tuberculosis of the Hip and Spine in Adults. Mr. A. Brownlee will also speak.
WEDNESDAY.
History of Medicine. 5 P.M., Sir Robert Armstrong-Jones: Faith Healing. Dr. B. N. C. Roy and Dr. R. O. Moon will also speak.
Surgery. 8.30 P.M., pathological meeting; specimens will be shown.
FRIDAY.
Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Dr. Joseph Geoghegan: (1) Gouty Tophi and Spondylitis. Mr. Duncan Fitzwilliams: (2) Rhinophyma. Dr. F. Parkes Weber: (3) Osteitis Deformans (Paget) with Pre-tibial Calcified Nodules. (4) Another Member of an Acholuric (Spherocytic) Family described in 1910. Mr. A. Simpson-Smith: (5) Multiple Cysts of Kidney Simulating Mesenteric Cysts. Dr. Philip Ellman: (6) Endocrinal Obesity (Hypothyroidism) with Œdema of the Legs, Osteo-arthritis, and Hypertension. Dr. J. H. G. Mason (for Dr. Thomas Hunt): (7) Muscular Dystrophy with Obesity and Genital Dystrophy (? Fröhlich's Syndrome).
Radiology. 8.30 P.M., Dr. R. S. Paterson, Dr. Struthers Fulton, and Dr. R. H. Sankey: The Planning and Organisation of a Radiological Department in a General Hospital.

HARVEIAN SOCIETY OF LONDON.
FRIDAY.—8.30 P.M. (26, Portland-place, W.), clinical meeting.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.
FRIDAY.—7.45 P.M. (De Vere Hotel, Kensington), Dr. J. F. Halls Dally, Dr. W. S. C. Copeman, and Dr. C. B. Dyson: Recent Advances in Rheumatism.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.), Mr. M. P. Reddington, Mr. J. B. Blaikley, Dr. T. F. Meyrick, and Dr. F. Hudson Evans: That all Confinements are best conducted in a Midwifery Institution.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY.—8.30 P.M. (11, Chandos-street, W.), Mr. Aleck Bourne: The Psychological Conditions Underlying Gynæcological Symptoms.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
THURSDAY.—8 P.M., Mr. R. F. Phillips, M.S., and Mr. G. S. Innes: Physical Measurements in High Voltage X Ray Therapy. Miss J. Honeyburne and Mr. W. V. Mayneord, D.Sc.: Note on Depth Doses from Teleradium Units.
FRIDAY.—11 A.M., medical members will visit the new works of Messrs. Newton and Wright (68, Ballards-lane, N.). 5.30 P.M., case demonstration and discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF GLASGOW.
TUESDAY.—4.30 P.M. (Tennent Memorial Building, Church-street), Dr. Chesar Michaelson: Squint and Other Defects of Muscle Balance.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland-place, W.
WEDNESDAY.—3.30 P.M., Dr. Margaret Salmond: The National Importance of Women's Health.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY.—2.30 P.M., Sir Edmund Spriggs: Diseases of Small and Large Intestine.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Dr. C. H. Andrewes: Recent Work on Viruses.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological conference. 3.30 P.M., Prof. Fletcher Shaw: Genital Prolapse. 4.30 P.M., Mr. Kenneth Walker: Venereal Diseases.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. Geoffrey Keynes: Diseases of the Breast.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY to FRIDAY.—4.30 P.M., course in methods of examination and diagnosis.
FRIDAY.—4 P.M., Mr. C. Gill-Carey: The Treatment of Sinusitis.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
TUESDAY.—5.30 P.M., Dr. B. T. Parsons-Smith: Mitral Disease.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh-road, S.W.
FRIDAY.—4.30 P.M., Mr. G. H. Alabaster (for Mr. V. B. Green-Armytage): Physical Medicine in Pelvic Disorders.

MANCHESTER ROYAL INFIRMARY.
FRIDAY.—4.15 P.M., Dr. E. W. Twining: clinical demonstration.

ANCOATS HOSPITAL, Manchester.
THURSDAY.—4.15 P.M., Dr. Arnold Renshaw: Methods of Dealing with Pathological Specimens.

LEEDS GENERAL INFIRMARY.
TUESDAY.—3.30 P.M., Mr. A. B. Pain: demonstration of orthopædic cases.

Births, Marriages, and Deaths

BIRTHS

ALLAN.—On March 19th, at Southsea, the wife of Dr. W. H. Allan—a son.
GRANT.—On March 27th, at Bentinck-street, W., to Dr. Margaret Grant (*née* Gamble), the wife of A. Stanley Grant, of St. James's-court, Buckingham Gate, S.W.—a son.
LANG.—On March 24th, at Hertford County Hospital, the wife of Dr. Fred Lang, of Hoddesdon—a son.
SOMMERVILLE.—On March 23rd, at East Grinstead, the wife of Dr. A. C. Sommerville, of East Grinstead—a son.
SOUTHERN.—On March 21st, at Broughton-in-Furness, the wife of Dr. W. Graham Southern—a daughter.
THORLEY.—On March 20th, the wife of Dr. A. S. Thorley, of Friern Barnet-road, N.—a daughter.

MARRIAGES

HARVEY—HEYMER.—On March 26th, at Kingston-on-Thames John Cuthbert Harvey, M.B., B.S. Lond., to Evelyn Jessie, only daughter of Mr. Herbert W. Heymer, of Surbiton.

DEATHS

BROWN.—On March 27th, in London, Henry Reynolds Brown, M.D. Edin., J.P., of Maldon, Essex.
CHURCHILL.—On March 24th, at West Malvern (formerly of Chesham), John Foot Churchill, F.R.C.S. Eng., aged 95.
DYSON.—On March 22nd, at Monte Carlo, Colonel Thomas Edward Dyson, M.B. Edin., I.M.S. (retd.), aged 77.
FRANCIS-WILLIAMS.—On March 25th, at Dowlais, Cecil Hughes Francis-Williams, M.R.C.S. Eng.
HENDERSON.—On March 25th, at Tunbridge Wells, Hester Morris Henderson, M.B. Edin., eldest daughter of the late William Henderson, of Liverpool.
HOSKYN.—On March 28th, at Exminster, Surgeon Rear-Admiral Donald T. Hoskyn, R.N., of Ashbrittle, Somerset.
SLEMAN.—On March 26th, at Norwood, S.E., Colonel Richard Reginald Sleman, M.D. Durh., L.S.A., Col. R.A.M.C., (T.A.).

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

PREVENTIVE POSSIBILITIES OF GENERAL PRACTICE*

BY HARRY ROBERTS, L.M.S.S.A.

THIS is not an informative lecture, but an introduction to a course of informative lectures, and my only claim to be heard by you lies in the fact that I have been engaged in active general practice for over forty years and consequently have had an unusual opportunity of observing the changes in the relations between the doctor and the patient, and between the doctor and the State in the last three or four decades.

When I started in practice, specialism, on its present-day scale, was unknown. There were, of course, men who specialised in surgery, and others in ophthalmology; a few men had a reputation of knowing a lot about skin troubles, and a few others about disorders of the throat and ear. You could almost count the professed gynæcologists on the fingers of your hand. The G.P. covered nearly all the ground, and, for ninety-nine people out of a hundred, provided all the medical and surgical treatment they received between birth and death. In the then state of knowledge, I doubt if the public lost much by this arrangement.

In my first practice near Lands End the nearest hospital and the nearest specialist worth talking about were in Plymouth, over sixty miles away, and there were no ambulances of any kind. I was often confronted with the dilemma of tackling a fairly major operation that I had never performed before, or leaving my patient to certain death. Sometimes I was lucky, sometimes not so lucky. Removing a tumour with the patient lying on the ground outside a gipsy tent, and throwing the swabs into a camp fire, has elements of excitement of its own. The amputation of a breast in a cottage bedroom is not quite the same thing as giving a note of recommendation to the nearest hospital.

PRACTICE

The point I want to make is, that the general practitioner of those days had no easy way of escaping his responsibilities; he had to be a first-rate practical doctor. He killed a lot of people, but he saved more from avoidable death. His success depended on two things—his personal capacity for inspiring confidence in his judgment, and the results of the treatment he prescribed.

All doctors realise nowadays that in every illness and in every cure there is a big psychic or emotional element. Nobody who has been in practice half as long as I have could doubt it. "Blarney, you mean," says the supercilious, super-scientific unsuccessful. Not at all. Mere blarney cuts very little ice. I agree that a certain measure of tactful reticence on occasion helps to maintain confidence, and that not every patient or every patient's friend provides suitable soil on which the whole truth can usefully be broadcast. My experience has been that it nearly always pays to tell a patient, or at any rate his responsible relatives and friends, as much of the truth as you confidently know yourself. I reckon it one of the biggest compliments that can be paid me when I hear that a patient has said of me: "Oh, he's all right. He tells you straight," and I feel similarly flattered when I hear that a patient has said to a neighbour: "Oh, I don't take no notice of him; he's just like one of ourselves." And this brings me to what seems to me a fundamental mistake in conventional medical procedure.

MYSTERY-MEN

Right through the ages we have posed as mystery-men—as possessed of a lot of knowledge which laymen could not begin to understand. In the Dark Ages that went down very well, but since 1918 it won't do at all. I believe in nearly every case the most honest and, from a self-preservative point of view, the wisest course is to put all our cards on the table; pretend to no knowledge we do not possess; explain to people, in language to which they are accustomed, as much of the truth as they can grasp; point out to them the difficulties and the limitations of medical art; and expound to them what we are trying to do and how we are trying to do it. It is no longer necessary for us, from any point of view, to pretend that we are medical know-alls. The majority of people are well aware that there are no such creatures. Five years ago Sir Kaye Le Fleming said:—

"Preventive medicine cannot develop as it should without the coöperation of the public. Good health should be the right of every citizen, and the doctor's responsibility is not discharged by treatment alone. The patient has a right to know why he is ill, as well as the steps he must take to get well. Not until he insists on this point as a matter of course will preventive medicine come into its own."

Not all doctors who are well furnished with technique and the kind of knowledge expressed in medical text-books and investigated by medical examiners are equally successful in practice. And I am not thinking only of numbers of patients or size of professional income but of success in curing sick people and of helping healthy people to keep well. Many of us when we leave our medical school are far too apt to look upon diseases as so many demoniac entities which we are peculiarly equipped to exercise, but we soon find in practice that we are confronted not so much by diseases as by men, women, and children who are ill.

When I started doctoring I had a lot of pre-graduate interests highly relevant to the work of a general practitioner. From my schoolboy days I was interested in the people with whom I came into contact in the country village where I lived; in their different ways of looking at things and in their different problems. I knew what their suppers were like, and how crippled their parents often were, and the sort of amenities they enjoyed—and didn't. A little later I was attracted by the philosophic and economic discussions that were being conducted in the reviews and on the platforms of lecture-halls. I found these interests of the greatest help in medical practice; and to them, quite as much as to the small amount of specialist knowledge which I possess, I attribute such success as I have had in my medical career.

General practice to-day is a very different thing from when I started out forty years ago, and a very different thing from what we may call general practice twenty years hence. To-day we are at the parting of the ways; and I think that only exceptional individuals can make of general practice during the

* Inaugural address (abridged) of the Post-graduate Course in Preventive Treatment, delivered in B.M.A. House on March 30th.

intermediate period a dignified, interesting, and socially valuable career. Yet, as Lord Horder pointed out a couple of months ago :—

"The family doctor is capable of being the most valuable member that society possesses. Without the mediation of the doctor, how are the common people to link up with the health services? The question is whether the doctor has the courage and independence to adapt himself to the world that he lives in, rather than to the world in which his father or his grandfather lived."

A CHANGING PUBLIC

We all know that at the moment a large section of the public, especially the intelligent public, does not think much of the general practitioner.

No informed, unbiased doctor in this country can doubt that we ourselves are responsible for no small part of our fall in popular esteem. I am no sentimental believer in the sanctity of the old-fashioned family doctor. I believe that the average general practitioner of to-day compares well with him in technical knowledge, social conscience, and general decency. But a great change, and in my opinion a very desirable change, has taken place in the popular mind. Look at the books of which the Penguin and Pelican series are able to sell fifty to a hundred thousand copies apiece—books by Freud, Laski, Leonard Woolf, Clive Bell, and the rest. Thirty years ago there would have been a difficulty in selling a couple of thousand of any one of these books. We are no longer dealing with the same public, or with a public possessed of the same standards. The new public demands more, deserves more, needs more. I can't help wondering, doubtfully, if we have kept pace.

FUNCTION OF THE PRACTITIONER

The basic importance of the general practitioner, the family doctor, in any national system of health services should be as obvious to everyone in Whitehall, and to every intelligent member of the public, as it is to the leaders of our own profession. No matter how specialism and hospital and clinic systems may develop, it is clear that there must be some preliminary selection of cases. It would be foolish for everyone with a headache or digestive upset to rush off to a hospital, diverting energy and time from the therapeutic and special work which should be its main concern. As one result of his education, the average doctor in this country, whatever his faults and limitations, is an excellent diagnostician—that is to say he can nearly always recognise the physical diseases to which names have been given—and this is a very valuable thing, which such post-graduate courses as the present will do much to foster. I believe that mastery of the art of diagnosis is the biggest contribution which the general practitioner can make to social well-being. Indignation has been expressed at this conception of the private doctor's most important function. It has been suggested that it reduces him to the position of a shop-walker who merely directs customers to the appropriate department, but a truer parallel is furnished by the police-court magistrate, whose work is not generally regarded as petty or contemptible. But diagnosis, even for the general practitioner, is not enough. He is, or should be, competent to apply all relevant existing knowledge to the treatment of 99 per cent. of the patients who consult him. In dealing with this majority he is as competent and as potent as the most be-baroneted royal physician or surgeon.

PREVENTION

In addition to these two functions, there is one other (possibly the most important of all) which, although it would seem to be within his obvious province, the general practitioner has fulfilled but indifferently—the prevention of disease. Preventive medicine is verbally all the rage. Great surgeons and great journalists join humble practitioners in paying homage to the ideal of prevention; and though their exhortations are not always convincing, the general sentiment which is used to justify them is sound, and is shared by an increasing number of people. Yet, in the whole course of medical training, the principles of healthy living are hardly referred to. If the general practitioner of to-day has any knowledge of personal hygiene, or of the personal care of health, it is safe to say that he did not acquire it within the walls of his medical school.

Samuel Butler has remarked: "A physician's physiology has much the same relation to his power of healing as a cleric's divinity has to his power of influencing conduct." The additions to our physiological knowledge in the last half-century have been enormous, and have radically altered the potentialities of the medical art. All sorts of hygienic rules which had none but empiric basis, and were therefore open to sceptical criticism, are now known to have chemical and physiological validity. The outstanding medical victories of the past hundred years or so are in the realm of preventive medicine. Sanitary reforms can claim most of the praise for the great fall in the national death-rate, and especially for the disappearance or diminution of the great epidemic scourges, such as plague, typhus, infantile gastro-enteritis, and typhoid. The improvement in the standard of living of the poor, and the wider availability of good and suitable food has done more to lower the incidence and the fatality of tuberculosis than has any specific medical treatment. We general practitioners had no particular share in these successes; sometimes, indeed, we played the part of conscientious objectors.

A little while ago the possibilities of preventive medicine seemed to be nearing their limits. Further knowledge and experience have shown that this is far from the case, even in the realm of collective hygiene. So long as there is a wide disparity as at present between the death-rates of the poor and the rich, and of the industrial towns and the agricultural districts, there is obviously plenty of scope for our social and economic reformers; and it is up to us general practitioners, who alone have the right of entering the homes of the people on confidential, friendly terms, constantly to force the facts on the public attention. It is not irrelevant, and, in a cynical way, not unamusing, to quote the words of Mr. Lloyd George in 1911, when he was telling the public about the glorious results that would follow the passing of the National Insurance Act.

"The insurance committees," he said, "will have to make reports to the municipalities and the Government on the health of their districts as it affects the administration of the Act. These reports will be most valuable. For the first time you will have reports on the health of 15 millions of working-class households in this country. Think of what that means! There is no end to what you may be able to do in the way of social reform upon these searching, penetrating and all-pervading reports on the causes of disease in the homes of the people. I am not for a moment minimizing the admirable work that is done by the medical officers of health. But a medical officer of health cannot visit every house in his district.

Here, on the other hand, you will have tens of thousands of medical men who will be serving those local health committees, visiting in the course of the year almost every home, and sending faithful reports to the health committee, upon which the majority will be representatives of the working-classes. Therefore, the doctors will not have to consider in their reports the feelings and idiosyncrasies of men on the committee who possess local interests. They will be reporting to men whose main interest is the good health of their own families. For the first time in the history of this country you have got that portentous fact to reckon with in social reform."

It is not to our credit as panel doctors that we have let this promise slide so easily into oblivion.

But another fact has emerged. Preventive medicine, we now see, is of individual no less than of collective application. The value of our new scientific knowledge is more than half wasted if the public cannot understand it. Moreover, even for its effective social application, the collaboration of the individual is found to be necessary; and this collaboration can be secured only if informed persons in direct contact with ordinary men and women—persons in whom those individuals have confidence as friends and advisers—act as missioners of health. I believe that it is as a hygienic missionary, a medical officer of health to the individual, that the ordinary practising doctor of the present, and even more of the future, can render the greatest service to the community. There is no one else in so favourable a position for doing this work.

There is a popular idea that between treatment and prevention there is a fundamental distinction. This is but a half-truth. Every time we successfully treat a wound of the hand we prevent the serious consequences that might follow. Every time we deal successfully with infections of the tonsils or of the nasal sinuses we prevent the graver consequences of which these are often the forerunners. All medicine is, in a sense, preventive in aim—it endeavours to prevent the bad coming to the worse. None of us can complacently boast that his mental and bodily structure will never call for conscious attention. The nearest approach to practical wisdom in this matter is embodied in the maxim: "A stitch in time saves nine." We inject antidiphtheritic serum, or send a "delicate" child away into the country, or walk briskly five miles before breakfast, or have our drains attended to, or include iodine, thyroid, or even digitalis in our daily dietary, as differing pathological tendencies indicate. And in all these measures, the curative and the preventive are closely interblended.

A FINAL WORD

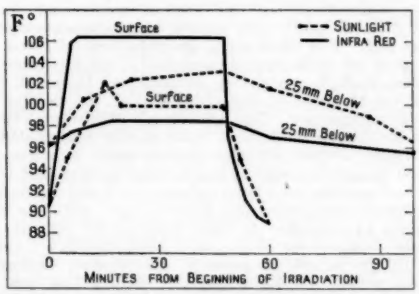
There are two things I would like to say in conclusion. Largely as a result of our own policy and public expressions we have, especially since the passing of the Insurance Act, been suspected by the public of caring only for the money we can get for our services. There is no occasion for cant about this. Ninety-nine people out of every hundred want all the money they can get. But it is unfortunate that the impression has got about that we do not much care about anything else. In the long run, the best way to get more money is to prove that we're worth more money. There are three codes of conduct in this matter. There is what I call the Cad's code, "Get the most you can and give the least you can"; the Gentleman's code, "Give the most you can and take only what you need"; and what may be called the Quaker's code, "Get the most you can, give the best you can." This last is a good enough working code for most of us.

And the other point. It is not easy for a practising physician or surgeon, inevitably preoccupied with symptoms and urgent consequences, habitually to take that wide view of phenomenal sequence and interrelation which is necessary if light is to be thrown on the great problems of prevention. There is a well-known Hippocratic saying that "to know the nature of man, one must know the nature of all things"; to which may be appended the maxim of an old Spanish physician: "If you only know medicine, you don't know that."

THE MODERN GAS FIRE

RESEARCH has made many changes in the gas fire in the last thirty years. Modern burners are silent and their more efficient combustion makes for economy. Vertical radiants have replaced the lumps of fire-clay held in place by a grid, and they now fill the entire fire opening. More subtle changes in the design and composition of the radiants have ensured that they now glow with a yellow-red instead of a dull red heat, and it is largely to this that the modern fire owes its more pleasant warmth.

The pleasantness of a source of radiant heat depends upon the wave-length of the rays it gives off. Long infra-red rays—those farthest removed from the visible spectrum—do not penetrate the epidermis; they heat the surface but have little effect upon the deeper tissues. This has been shown by Loewy and Dorno, who found that by irradiation with long infra-red rays the temperature of the surface of the skin could be raised to over 106° F., while at a depth of 25 mm. it remained at body temperature. Irradiation with the short and visible rays of sunlight, however, produced the reverse effect, the temperature at the surface being 100° F. when at a depth of 25 mm. it had risen to 103° F. (see Figure).



Temperature at the surface and at a depth of 25 mm. during irradiation with sunlight and with infra-red rays. (After Loewy and Dorno (1925) *Strahlentherapie*, **20**, 430.)

As a result the heat of the longer rays is concentrated at the level of the free nerve-endings in the skin and these convey to the mind a sensation of dryness and constriction which is definitely unpleasant. Short rays, on the other hand, exert their maximum effect at a level where their heat can be carried away by the circulating blood and produce a more comfortable sensation by exciting flushing and transudation.

The freshness of a room depends upon the amount of air movement and upon the proportion of long waves which reach the skin of the observer. At ordinary room temperatures the humidity is unimportant; it is only in a really hot atmosphere that greater humidity causes discomfort by impeding evaporation from the skin. Thus in a stuffy railway carriage or a heated glass-house the stuffiness is

due to the long rays given off inside, and days are felt to be close when there is little breeze and the sun-heated ground is giving off long rays which are trapped by the haze. To make a source of heat more comfortable its proportion of short infra-red rays must be raised as far as possible, and this is what has been done with the newer gas radiants. The proportion of rays less than 2 μ in wave-length—i.e., those with appreciable penetration—is now 8·7 per cent., which compares favourably with the proportion of the older fires. The increase in penetration is considerable. Measured through a clarified ox-horn screen $\frac{2}{3}$ mm. thick, an old fire showed a penetrancy of 8·2 per cent., while with a new type as much as 12·3 per cent. penetrated. Finally, Sir Leonard Hill has found that the airways of the nose and lungs are reflexly narrowed by the longer rays, and this may be a further explanation of the increased comfort of shorter wave-length radiation.

CHILDREN'S MINIMUM COUNCIL

AT a luncheon held by this council on Wednesday last at the London School of Economics the menu was based on recipes from the British Medical Association's cookery book, and the cost per head at bulk prices was estimated at 5*d*. Lord Horder, who presided, said he was not enamoured of minimums; it seemed to him a grim joke for medical men to be trying to find how little would suffice to keep a child whole; and though the council of course aimed at security for the minimum he would rather concentrate on making better use of the food that was wasted—the millions of herrings thrown back into the sea, and the milk sold cheap to manufacturers. Mrs. Yates, wife of an unemployed man, pointed out that 5*d*. a head was an impossible sum to spend on dinner; her special Sunday dinner for herself, her husband, and her little boy cost only 7*d*. Miss Eleanor Rathbone, M.P., chairman of the council, said that for families with five children the gap between physical needs and unemployment allowances amounted to 15*s*.–16*s*. a week (see *Lancet*, Feb. 5th, p. 356), and many wage-earners were no better off. For each child 3*s*. was now allowed, and if a pint of milk was taken daily, as recommended by the B.M.A. nutrition committee, this left 8*d*. a week for the rest of the child's food, its clothes, and all other expenses. The Children's Minimum Council, Miss Rathbone said, had been partly responsible for the introduction of the school-milk scheme, had helped to get the allowance for children raised to 3*s*., and had popularised rent rebates by local authorities. Its expenditure was only £600 a year, and she asked for help in response to this first public appeal. Mr. Harold Nicholson, M.P., said that besides "starvation in the midst of plenty" there was "ignorance in the midst of knowledge." Education and the upbringing of the young depended on their having enough of the right food, and now that knowledge existed we must cease to be so lazily optimistic about the inside of the people round us. Sir Kaye Le Fleming announced that the B.M.A. book, of which 130,000 copies were sold before it was advertised, is to be reissued in revised and more convenient form.

AN ALIBI

IT is a well-known fact that in the high temperature carbonisation of coal as used in the manufacture of gas carcinogenic hydrocarbons are formed. In fact the experimental study of carcinogenesis as practised during the last 20 years is based on experiments in which coal tar obtained from gas works was applied to the skin of mice and was found to produce cancer of the skin. Mr. Brownlie's theory [1] is that these carcinogenic hydrocarbons, which are solid substances at ordinary temperature and have a high boiling point, pass into the coal gas after the latter has been purified "forming one of the chief constituents of average manufactured towns gas supply." No evidence is adduced in support of this statement and on inquiry we are informed that there is no reason to suppose that coal gas as manufactured at present and supplied to the consumer contains any carcinogenic hydrocarbons. There is thus no prima-facie case for the author's thesis that "a large proportion of cancer cases are due to eating contaminated food resulting from the widespread use of manufactured towns gas for cooking. . . ." The alibi is sufficient.

[1] The Cause of Cancer. By David Brownlie, B.Sc. (London). London: Chapman and Hall. 1938. Pp. 208. 7*s*. 6*d*.

COUPONS FOR A MEDICAL CHARITY

Dr. HENRY ROBINSON writes from 49, Bedford-square, London, W.C.1: "Four months ago you kindly allowed me to appeal to the profession for help in collecting coupons from the *Daily Mirror* and *Daily Sketch* on behalf of the Sherman Bigg Fund, administered by the Royal Medical Foundation of Epsom College. As this scheme ends on March 31st, you may be willing to allow me to report the results. First, may I give you a brief résumé of the work of the Sherman Bigg Fund for 1937? The income from Mr. Bigg's bequest was £155; and special donations to augment it raised the total to £774, which, for the third year's working of the fund, may be regarded as reasonably satisfactory. From this, 32 educational grants were made for girls and boys, and 8 maintenance grants for widows or orphans. Next, as to the coupon collection. From various friends whose help had been enlisted before I wrote to you, some 20,000 coupons have been received, value about £10. The great bulk of these have come from the medical superintendents of several London county hospitals, whose kindness I desire to acknowledge most thankfully. Anonymous correspondents have sent in about 1300 coupons; 1000 of these in one envelope may have come from one of the hospitals aforesaid; and if that is so, the total response of the medical profession to my letter has been of the value of not quite three shillings. Any comment of mine upon this fact would be expressed in language which you, Sir, would probably not care to print. I am, however, still hoping for collections to reach me after the end of the month."

NEW PREPARATIONS

NEO-FEMERGIN.—Ergotamine tartrate has been used in gynæcology and obstetrics since 1920, and is issued by Sandoz Products of Basle under the name of Femergin. In 1935 workers in England, Switzerland, and the United States almost simultaneously discovered the new alkaloid known in this country as ergometrine (Dudley and Moir). A combination of ergotamine tartrate (2 parts) and ergometrine tartrate (1 part) is now offered under the name of Neo-Femergin by J. Flint, Sandoz Products, 134, Wigmore-street, London, W.1. The ergometrine, it is stated, induces rapid but comparatively transient, uterine contractions, while the action of the ergotamine is slower but more prolonged. Injection of Neo-Femergin is considered "the treatment *par excellence* for postpartum atony and hæmorrhage," and the preparation is sold in ampoules as well as in solution and tablets for oral administration. The particular indications for ergotamine (Femergin), ergometrine (Basergin), and the new product are discussed in a booklet on the Alkaloids of Ergot of Rye published by the manufacturers.

A medical price list and compendium for 1938 reaches us from GEDEON RICHTER (GREAT BRITAIN), LTD., 14, Weedington-road, N.W.5. Besides brief accounts of many hormone preparations it contains a list of drugs, pills, tablets, and concentrated mixtures.